

PROPOSED HARBERT TRACT CLASS II LANDFILL

PERMIT DRAWINGS

PERMIT ISSUE
NOT FOR CONSTRUCTION

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AA
S1

SECTION REFERENCED

SHEET WHERE SECTION IS PRESENTED

STANDARD SECTION LOCATION
CALLOUT (SHEET AND DETAIL)

STANDARD DETAIL CALLOUT

1
S1

DETAIL REFERENCED

SHEET WHERE DETAIL
IS PRESENTED

STANDARD DETAIL LABEL AND CALLOUT

DETAIL TITLE

DETAIL

SCALE AS SHOWN

1
S1

DETAIL REFERENCED

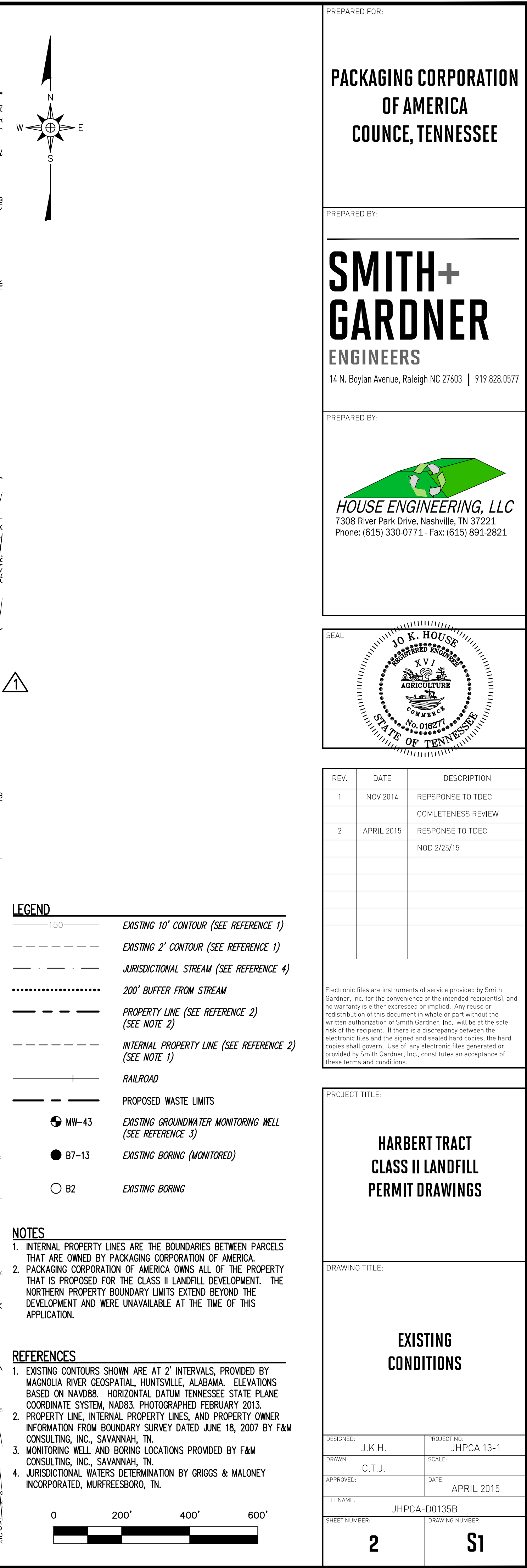
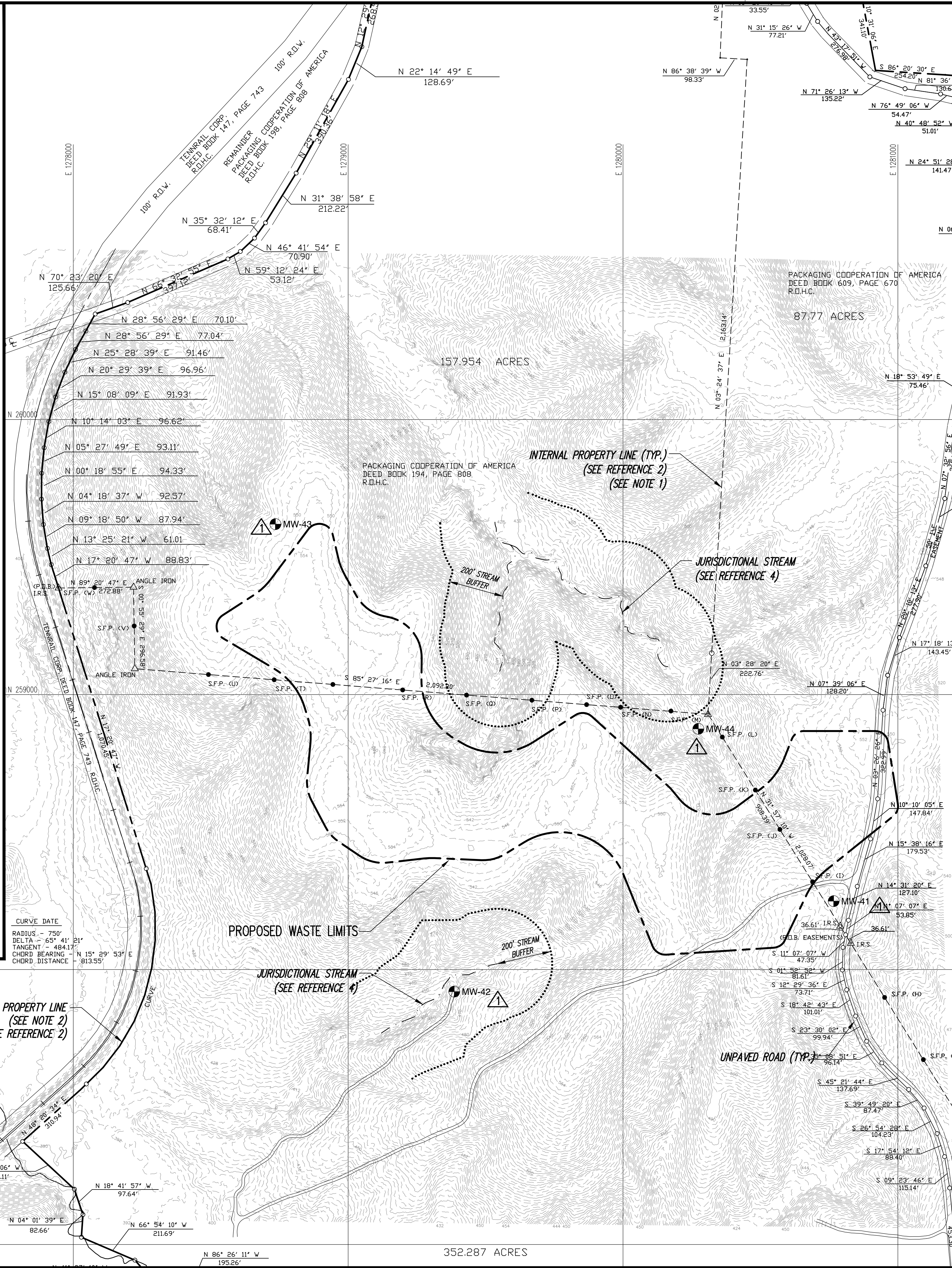
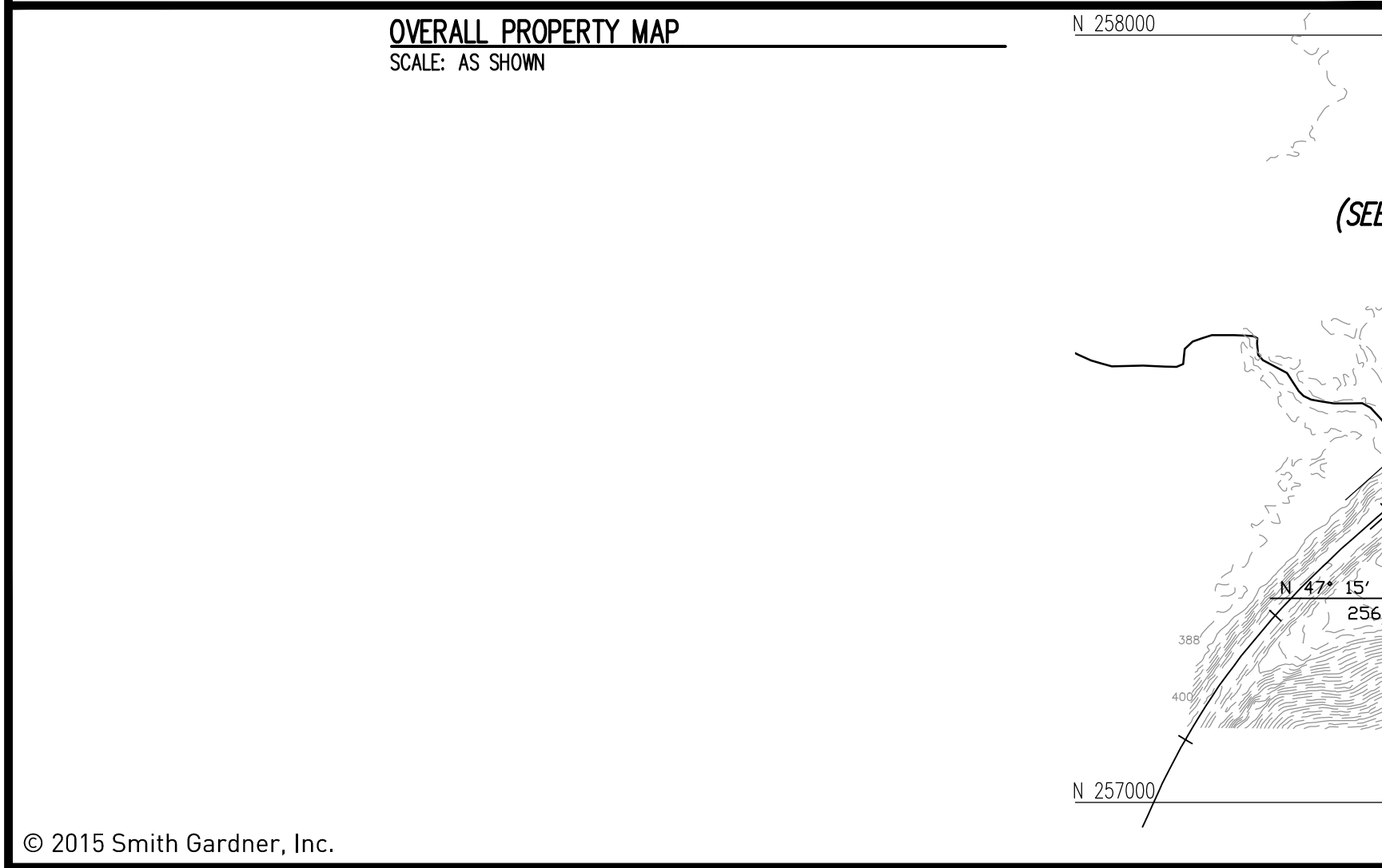
SHEET WHERE DETAIL
IS PRESENTED

STANDARD REVISION
CALLOUT (SHEET AND DETAIL)

1

SHEET SET REVISION NUMBER


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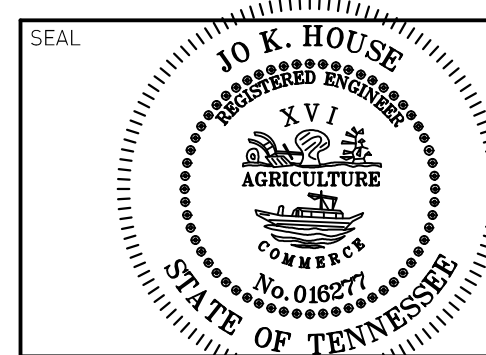
PREPARED BY:

**PACKAGING CORPORATION
OF AMERICA
COUNCE, TENNESSEE**

The logo for Smith+Gardner Engineers, featuring the company name in a bold, sans-serif font. The word "SMITH" is on the top line, followed by a plus sign, and "GARDNER" is on the second line. Below this, the word "ENGINEERS" is written in a smaller, all-caps font. The logo is positioned in the bottom right corner of the page.

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

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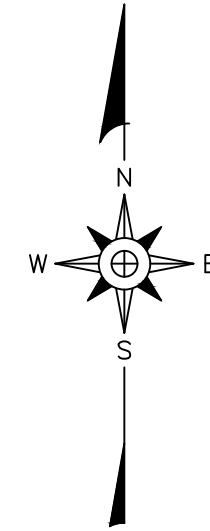
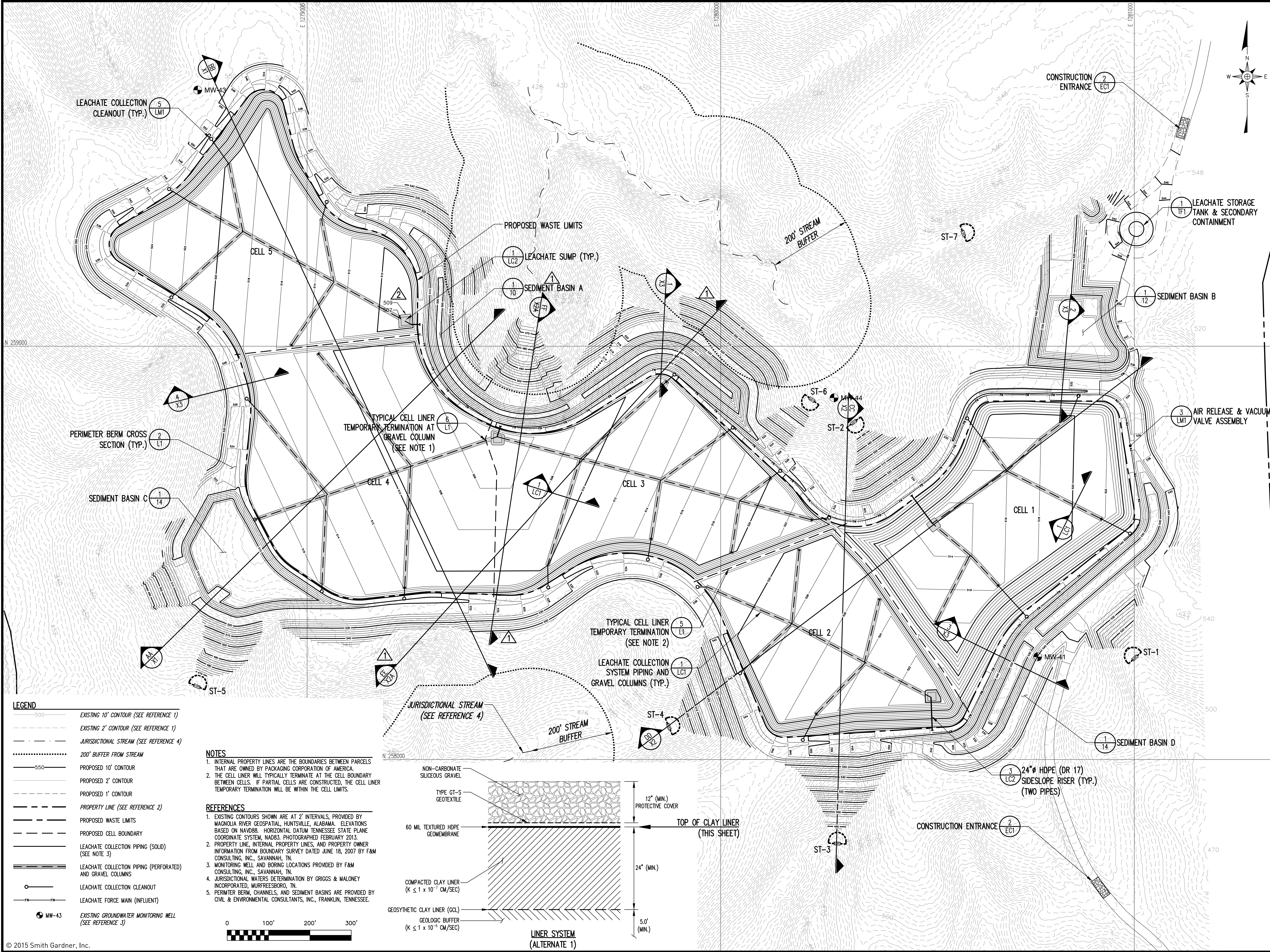
**HARBERT TRACT
CLASS II LANDFILL
PERMIT DRAWINGS**

DRAWING TITLE:

HYDROGEOLOGIC CONDITIONS

DESIGNED: J.K.H.	PROJECT NO: JHPCA 13-1
DRAWN: C.T.J.	SCALE: AS SHOWN
APPROVED:	DATE: APRIL 2015
FILENAME: JHPCA-D0143B	
SHEET NUMBER: 3	DRAWING NUMBER: S2

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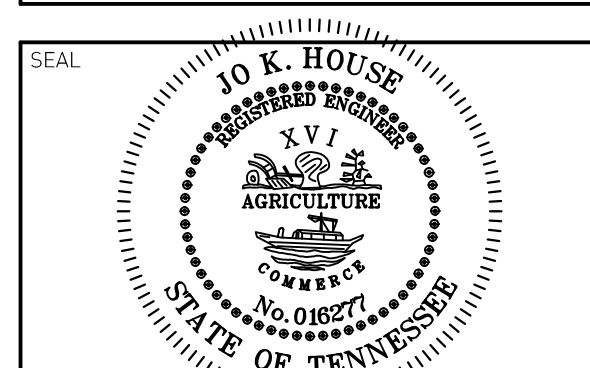
ENGINEERS

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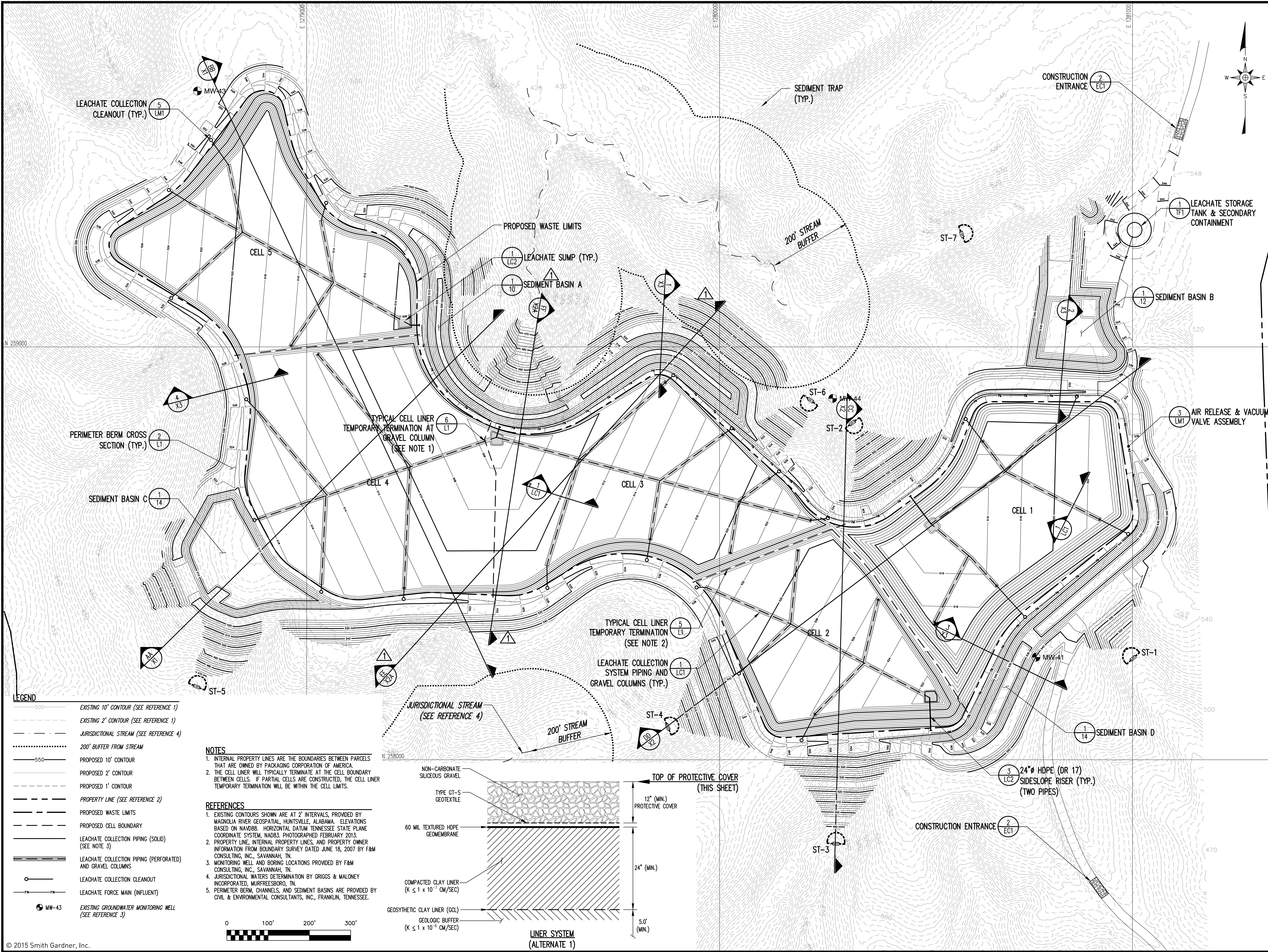
REV.	DATE	DESCRIPTION
1	NOV 2014	RESPONSE TO TDEC
		COMPLETENESS REVIEW
2	APRIL 2015	RESPONSE TO TDEC
		NDD 2/25/15
3	JULY 2015	RESPONSE TO TDEC
		COMMENTS MAY 21, 2015

PROJECT TITLE:

**HARBERT TRACT
CLASS II LANDFILL
PERMIT DRAWINGS**

DRAWING TITLE:	
TOP OF CLAY GRADING PLAN	
DESIGNED:	PROJECT NO:
DRAWN:	SCALE:
APPROVED:	DATE:
FILENAME:	JHPCA-D0137C
SHEET NUMBER:	DRAWING NUMBER:
5	S4

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3	JULY 2015	RESPONSE TO TDEC
		COMMENTS MAY 21, 2015

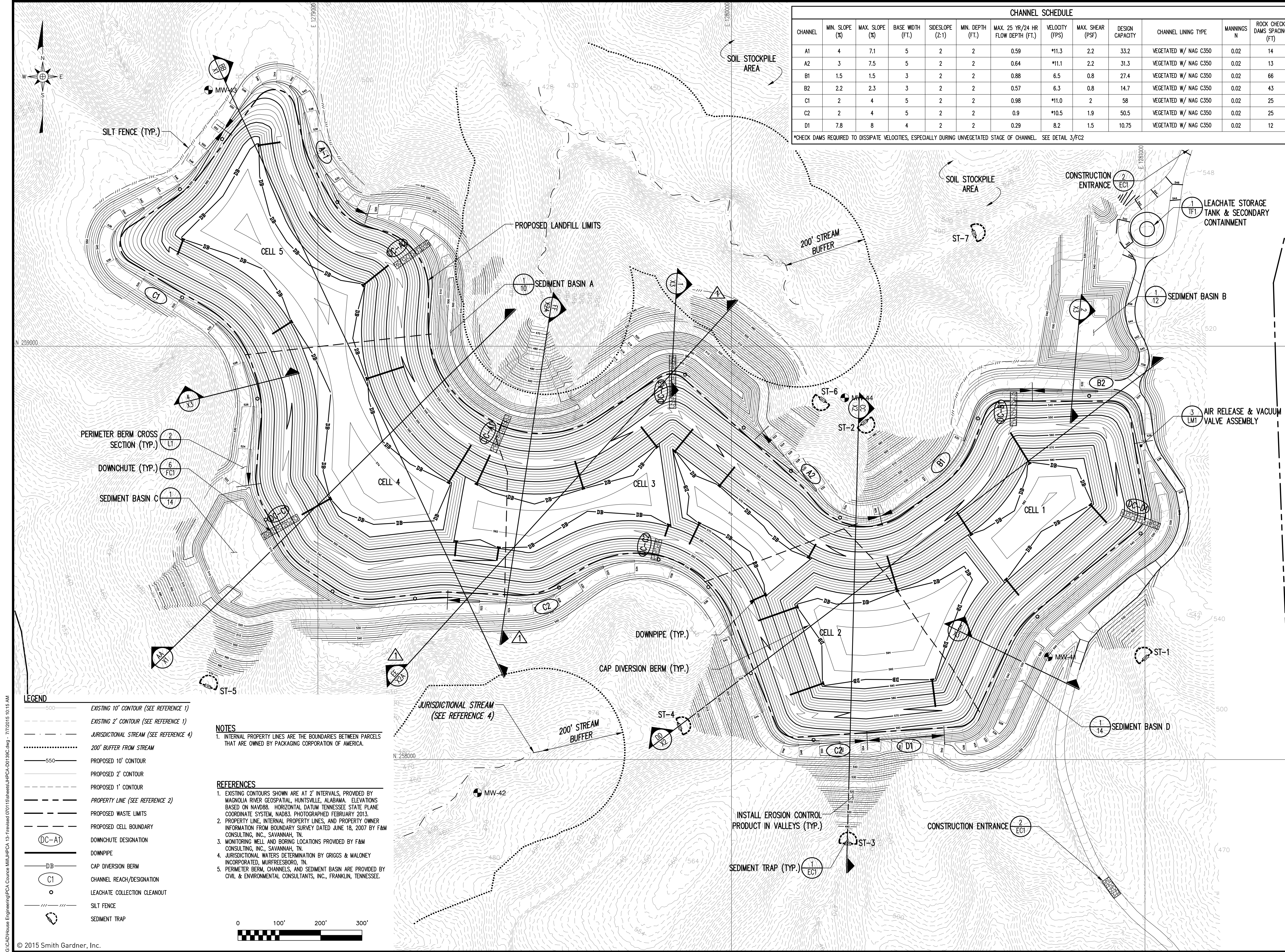
PROJECT TITLE:

HARBERT TRACT
CLASS II LANDFILL
PERMIT DRAWINGS

DRAWING TITLE:

TOP OF PROTECTIVE
COVER GRADING PLAN

DESIGNED:	J.K.H.	PROJECT NO:	JHPCA 13-1
DRAWN:	C.T.J.	SCALE:	
APPROVED:		DATE:	APRIL 2015
FILENAME:	JHPCA-D0138C		
SHEET NUMBER:	6	DRAWING NUMBER:	S5



CHANNEL SCHEDULE												
CHANNEL	MIN. SLOPE (%)	MAX. SLOPE (%)	BASE WIDTH (FT.)	SIDESLOPE (Z:1)	MIN. DEPTH (FT.)	MAX. 25 YR/24 HR FLOW DEPTH (FT.)	VELOCITY (FPS)	MAX. SHEAR (PSF)	DESIGN CAPACITY	CHANNEL LINING TYPE	MANNINGS N	ROCK CHECK DAMS SPACING (FT)
A1	4	7.1	5	2	2	0.59	*11.3	2.2	33.2	VEGETATED W/ NAG C350	0.02	14
A2	3	7.5	5	2	2	0.64	*11.1	2.2	31.3	VEGETATED W/ NAG C350	0.02	13
B1	1.5	1.5	3	2	2	0.88	6.5	0.8	27.4	VEGETATED W/ NAG C350	0.02	66
B2	2.2	2.3	3	2	2	0.57	6.3	0.8	14.7	VEGETATED W/ NAG C350	0.02	43
C1	2	4	5	2	2	0.98	*11.0	2	58	VEGETATED W/ NAG C350	0.02	25
C2	2	4	5	2	2	0.9	*10.5	1.9	50.5	VEGETATED W/ NAG C350	0.02	25
D1	7.8	8	4	2	2	0.29	8.2	1.5	10.75	VEGETATED W/ NAG C350	0.02	12

*CHECK DAMS REQUIRED TO DISSIPATE VELOCITIES, ESPECIALLY DURING UNVEGETATED STAGE OF CHANNEL. SEE DETAIL 3/FC2

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SEAL

JO K. HOUSE

REGISTERED ENGINEER

AGRICULTURE

NOV 01 2017

STATE OF TENNESSEE

REV.	DATE	DESCRIPTION
1	NOV 2014	RESPONSE TO TDEC
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PROJECT TITLE:

HARBERT TRACT

CLASS II LANDFILL

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DRAWING TITLE:

FINAL GRADING

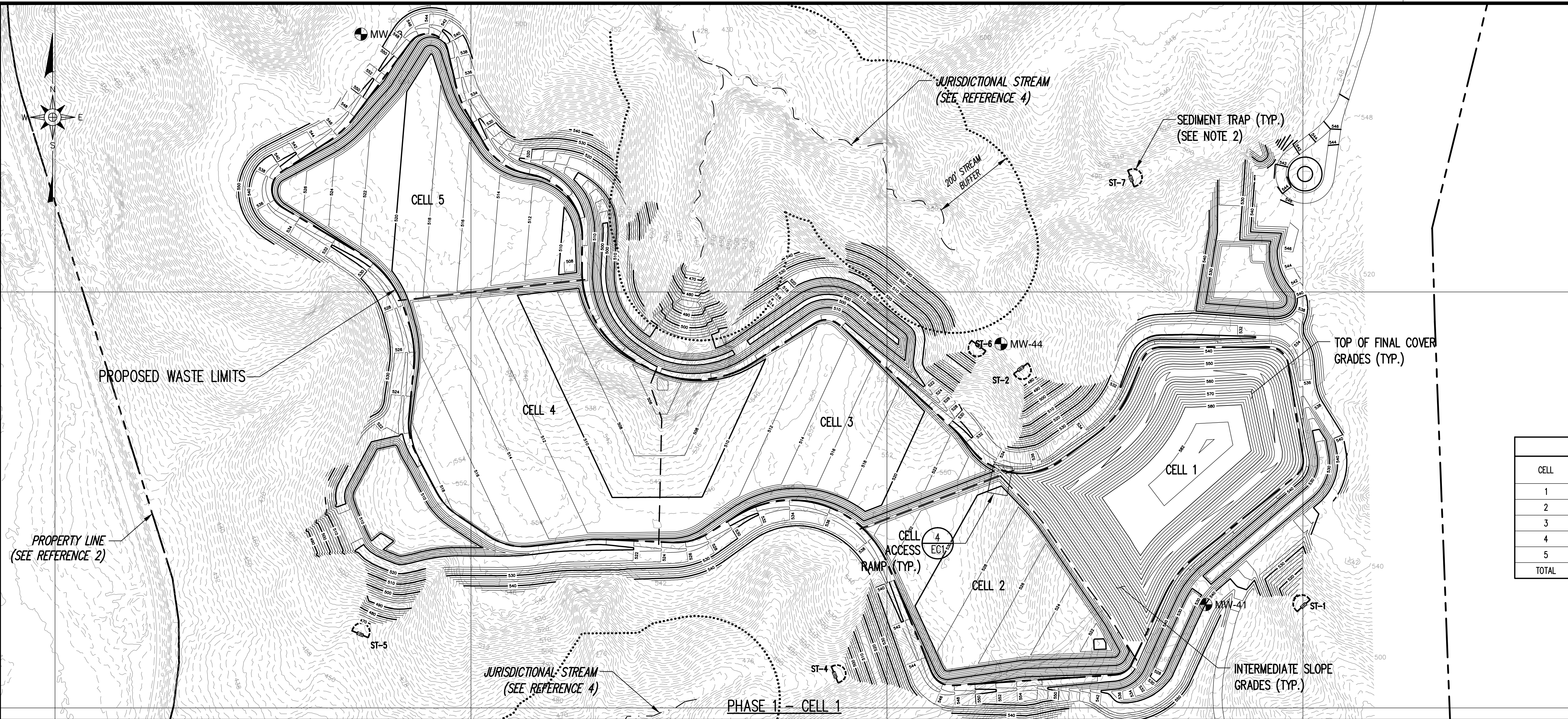
AND DRAINAGE PLAN

DESIGNED:	J.K.H.	PROJECT NO:	JHPCA 13-1
DRAWN:	C.T.J.	SCALE:	
APPROVED:		DATE:	APRIL 2015
FILENAME:	JHPCA-D0139C		
SHEET NUMBER:	7	DRAWING NUMBER:	S6

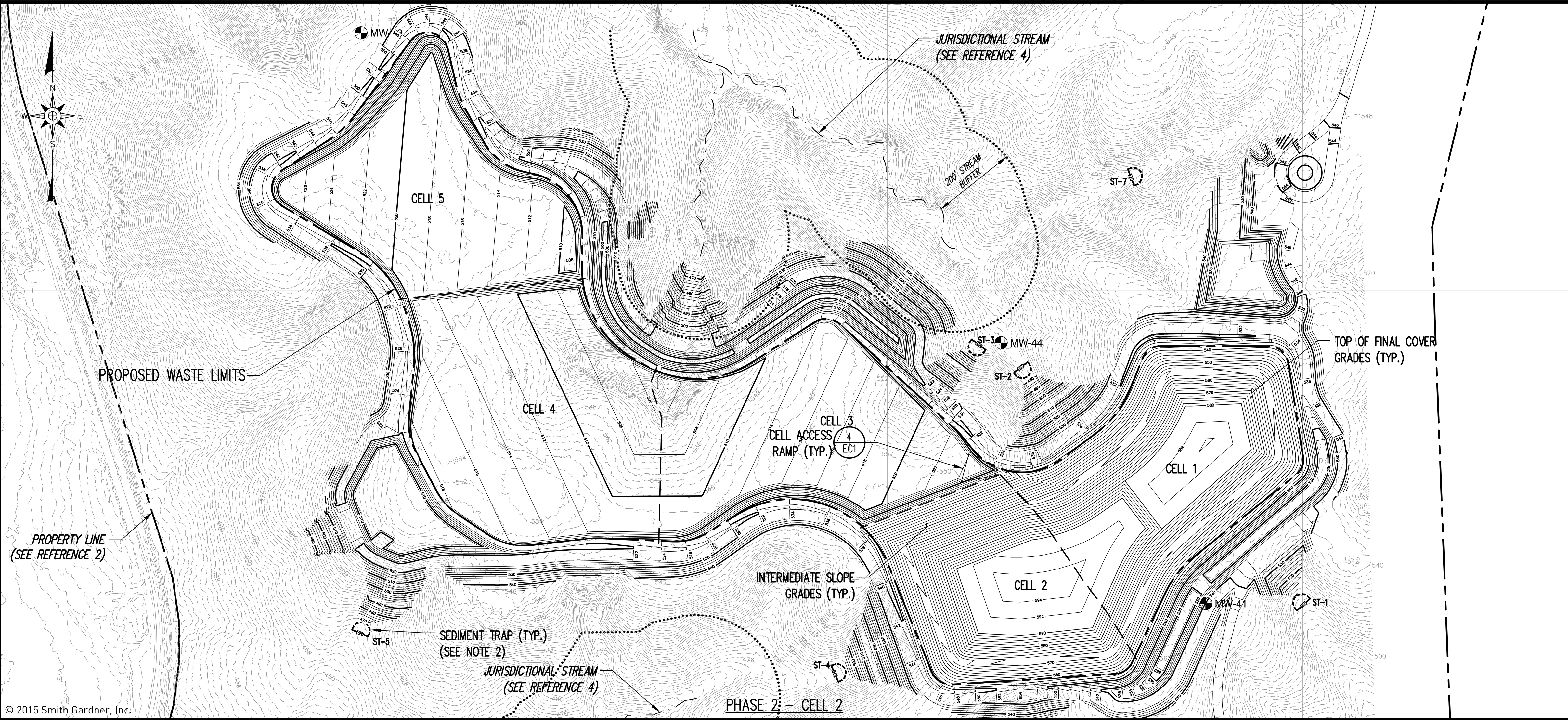
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VOLUME AND CELL LIFE				
CELL	CELL AREA (ACRES)	DISPOSAL VOLUME (CY)	DISPOSAL (TONS)	CELL LIFE
1	6.66	397,927	276,957	3 YRS, 12 MONTHS
2	4.85	377,918	263,031	3 YRS, 9 MONTHS
3	6.44	345,973	240,797	3 YRS, 6 MONTHS
4	7.72	499,887	347,921	5 YRS, 0 MONTHS
5	6.36	413,366	287,703	4 YRS, 2 MONTHS
TOTAL	32.04	2,035,071	1,416,409	20 YRS, 4 MONTHS



LEGEND	
	EXISTING 10' CONTOUR (SEE REFERENCE 1)
	EXISTING 2' CONTOUR (SEE REFERENCE 1)
	JURISDICTIONAL STREAM (SEE REFERENCE 4)
	200' BUFFER FROM STREAM
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	PROPERTY LINE (SEE REFERENCE 2)
	PROPOSED WASTE LIMITS
	PROPOSED CELL BOUNDARY
	EXISTING GROUNDWATER MONITORING WELL (SEE REFERENCE 3)

- NOTES**
- INTERNAL PROPERTY LINES ARE THE BOUNDARIES BETWEEN PARCELS THAT ARE OWNED BY PACKAGING CORPORATION OF AMERICA.
 - INSTALL SEDIMENT TRAPS AS SHOWN ON DRAWING S2.

- REFERENCES**
- EXISTING CONTOURS SHOWN ARE AT 2' INTERVALS, PROVIDED BY MAGNOLIA RIVER GEOSPATIAL, HUNTSVILLE, ALABAMA. ELEVATIONS BASED ON NAVD83. HORIZONTAL DATUM TENNESSEE STATE PLANE COORDINATE SYSTEM, NAD83. PHOTOGRAPHED FEBRUARY 2013.
 - PROPERTY LINE, INTERNAL PROPERTY LINES, AND PROPERTY OWNER INFORMATION FROM BOUNDARY SURVEY DATED JUNE 18, 2007 BY F&M CONSULTING, INC., SAVANNAH, TN.
 - MONITORING WELL AND BORING LOCATIONS PROVIDED BY F&M CONSULTING, INC., SAVANNAH, TN.
 - JURISDICTIONAL WATERS DETERMINATION BY GRIGGS & MALONEY INCORPORATED, MURFREESBORO, TN.
 - PERIMETER BERM, CHANNELS, AND SEDIMENT BASINS ARE PROVIDED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC., FRANKLIN, TENNESSEE.



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COUNCE, TENNESSEE

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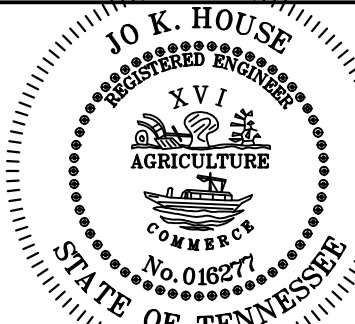
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ENGINEERS

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2	APRIL 2015	RESPONSE TO TDEC
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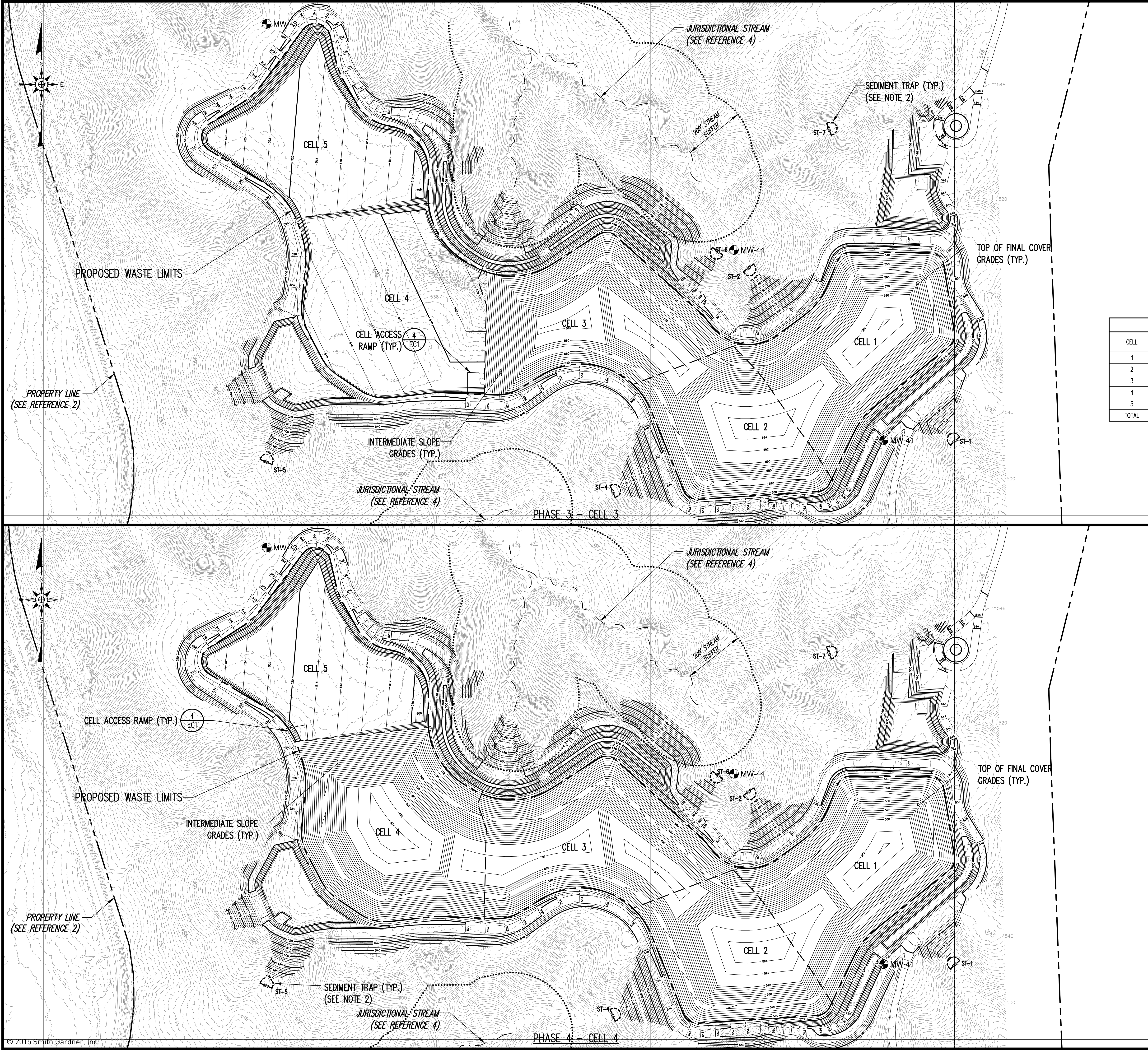
**HARBERT TRACT
CLASS II LANDFILL
PERMIT DRAWINGS**

DRAWING TITLE:

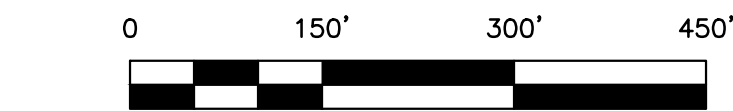
**LANDFILL PHASING PLAN
(SHEET 1 OF 2)**

DESIGNED:	J.K.H.	PROJECT NO:	JHPCA 13-1
DRAWN:	C.T.J.	SCALE:	
APPROVED:		DATE:	APRIL 2015
FILENAME:	JHPCA-D0140B		
SHEET NUMBER:	8	DRAWING NUMBER:	P1

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VOLUME AND CELL LIFE				
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 - EXISTING 2' CONTOUR (SEE REFERENCE 1)
 - JURISDICTIONAL STREAM (SEE REFERENCE 4)
 - 200' BUFFER FROM STREAM
 - PROPOSED 10' CONTOUR
 - PROPOSED 2' CONTOUR
 - PROPERTY LINE (SEE REFERENCE 2)
 - PROPOSED WASTE LIMITS
 - PROPOSED CELL BOUNDARY
 - MW-43
 - EXISTING GROUNDWATER MONITORING WELL (SEE REFERENCE 3)

- NOTES**
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 - INSTALL SEDIMENT TRAPS AS SHOWN ON DRAWING S2.

- REFERENCES**
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 - MONITORING WELL AND BORING LOCATIONS PROVIDED BY F&M CONSULTING, INC., SAVANNAH, TN.
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 - PERIMETER BERM, CHANNELS, AND SEDIMENT BASINS ARE PROVIDED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC., FRANKLIN, TENNESSEE.



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REV.	DATE	DESCRIPTION
2	APRIL 2015	RESPONSE TO TDEC
		NOD 2/15/15
3	JULY 2015	RESPONSE TO TDEC
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PROJECT TITLE:

**HARBERT TRACT
CLASS II LANDFILL
PERMIT DRAWINGS**

DRAWING TITLE:

**LANDFILL PHASING PLAN
(SHEET 2 OF 2)**

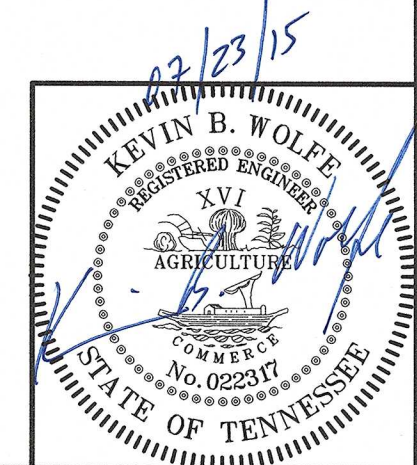
DESIGNED:	J.K.H.	PROJECT NO:	JHPCA 13-1
DRAWN:	C.T.J.	SCALE:	
APPROVED:		DATE:	APRIL 2015
FILENAME:	JHPCA-D0140B		
SHEET NUMBER:	9	DRAWING NUMBER:	P2



- 5 ROLLED EROSION CONTROL MATTING (NAG SC150 OR EQUAL)**
NOT TO SCALE



- 6 TURF-REINFORCEMENT FOR EMERGENCY SPILLWAY WEIR SECTION (NAG VMAX W3000 OR EQUAL)**



REVISION RECORD		
NO	DATE	DESCRIPTION
1	04/10/15	REVISED SPILLWAY AND DOWN CHUTE GRADING AND DETAILS
2	05/12/15	REVISED DETAIL 4

CEC

Civil & Environmental Consultants, Inc.
325 Seaboard Lane • Suite 170 • Franklin, TN 37067
615-333-7797 • 800-763-2326
www.cecinc.com

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BASIN A DETAILS

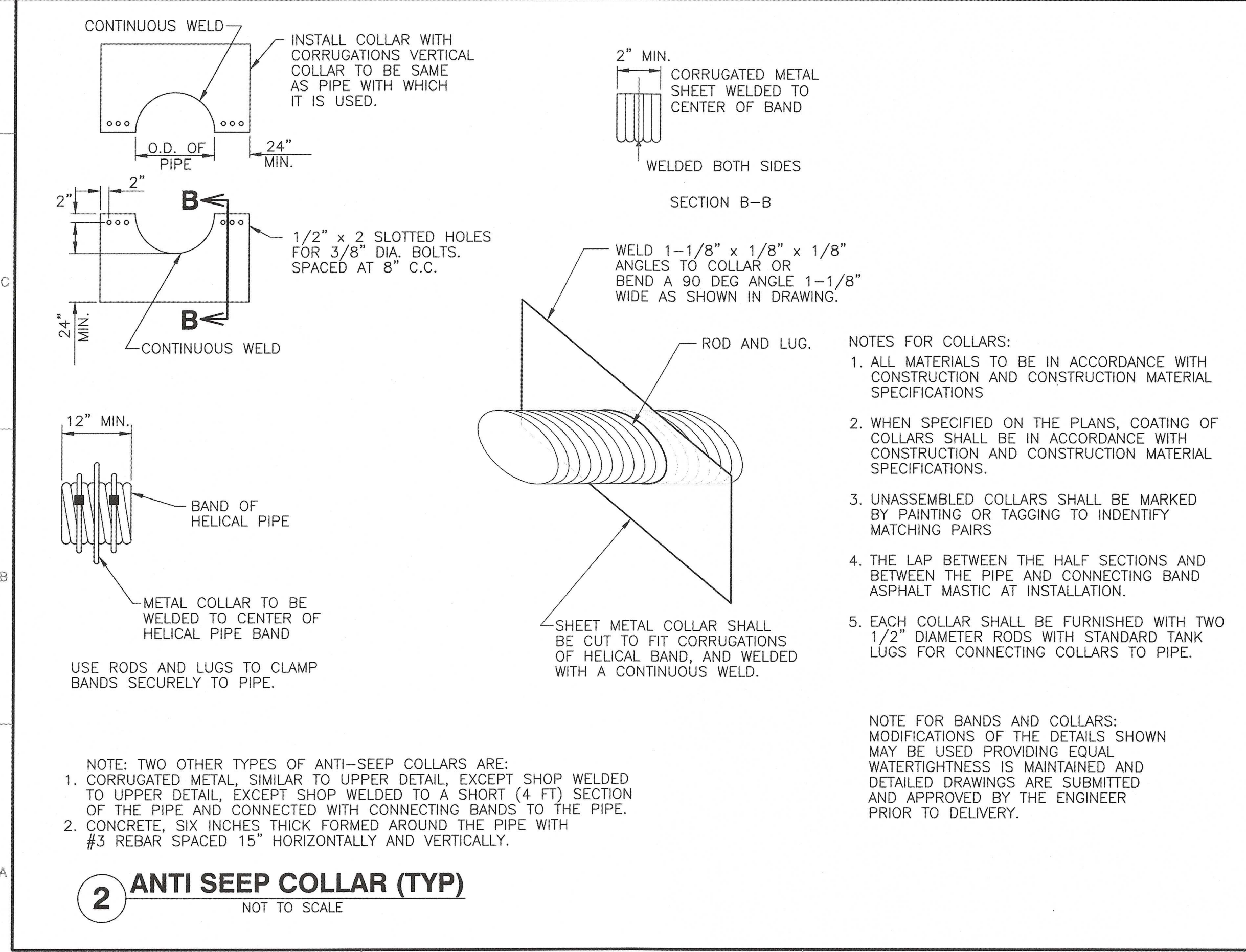
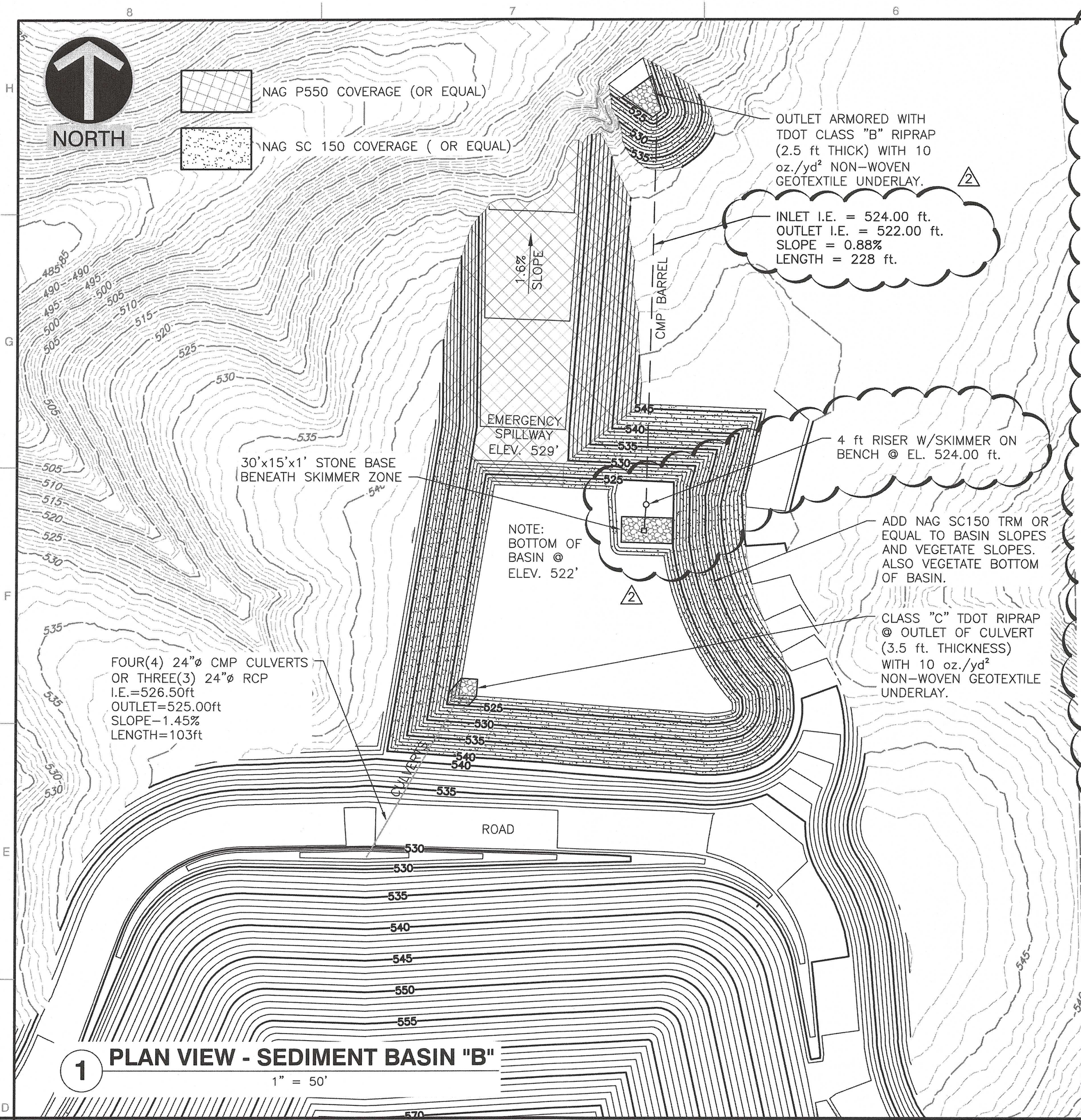
DATE:	OCTOBER 2014	DRAWN BY:	LM
DWG SCALE:	AS NOTED	CHECKED BY:	SEC
PROJECT NO:	132-067		
APPROVED BY:	KRW		

DRAWING NO.:

SHEET

11

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Sediment Basin "B" Design Information (Final Grade Phase)	5 Year/24-Hr	25 Year/24-Hr	100 Year/24-Hr
Runoff Volume (ft ³)	65,129	94,907	122,472
Peak Inflow into Basin (ft ³ /sec)	33.3	47.5	60
Minimum Required Surface Area of Basin based on Barfield and Clar, in Smolen et al., 1988 (ft ²) as Required in TDEC EPSC Manual	14,505	N/A	N/A
Basin Surface Area at Riser Crest Elevation (ft ²)	23,146	N/A	N/A
TDEC-Required Dry and Wet Storage Volumes (ft ³)	10,130 (wet) 10,130 (dry)	10,130 (wet) 10,130 (dry)	10,130 (wet) 10,130 (dry)
Actual wet and dry storage provided (ft ³)	32,982 (wet) 95,551 (dry)	32,982 (wet) 95,551 (dry)	32,982 (wet) 95,551 (dry)
Estimated Peak Detained Water Elevation in Basin (ft.)	526.84 (> 12' Freeboard)	528.19 (> 11' Freeboard)	528.76 (> 11' Freeboard)
Estimate of Peak Discharge Through Barrel (ft ³ /sec) (Including Skimmer Discharge)	0.23	0.23	0.98
Total Discharge from Skimmer (ft ³ /sec)	0.23	0.23	0.23
Total Peak Discharge Flow Rate from Basin (ft ³ /sec) (Including flow through Emergency Spillway)	0.23^^	0.23^^	0.98^^
Reduction in Peak Flow Due to Basin (%)	99	99	98
Max. Upflow Flux During Skimmer Dewatering (ft ³ /sec/ft ²)	1.2E-05	1.90E-04	6.20E-04
Flow-Weighted Avg. Ideal Particle Size Retained (microns)*	2.5	2.5	2.6
Estimated Maximum Time to Drain Basin Volume Via Skimmers To Wet Pool Elevation (Days)	2.7	4.2	4.9

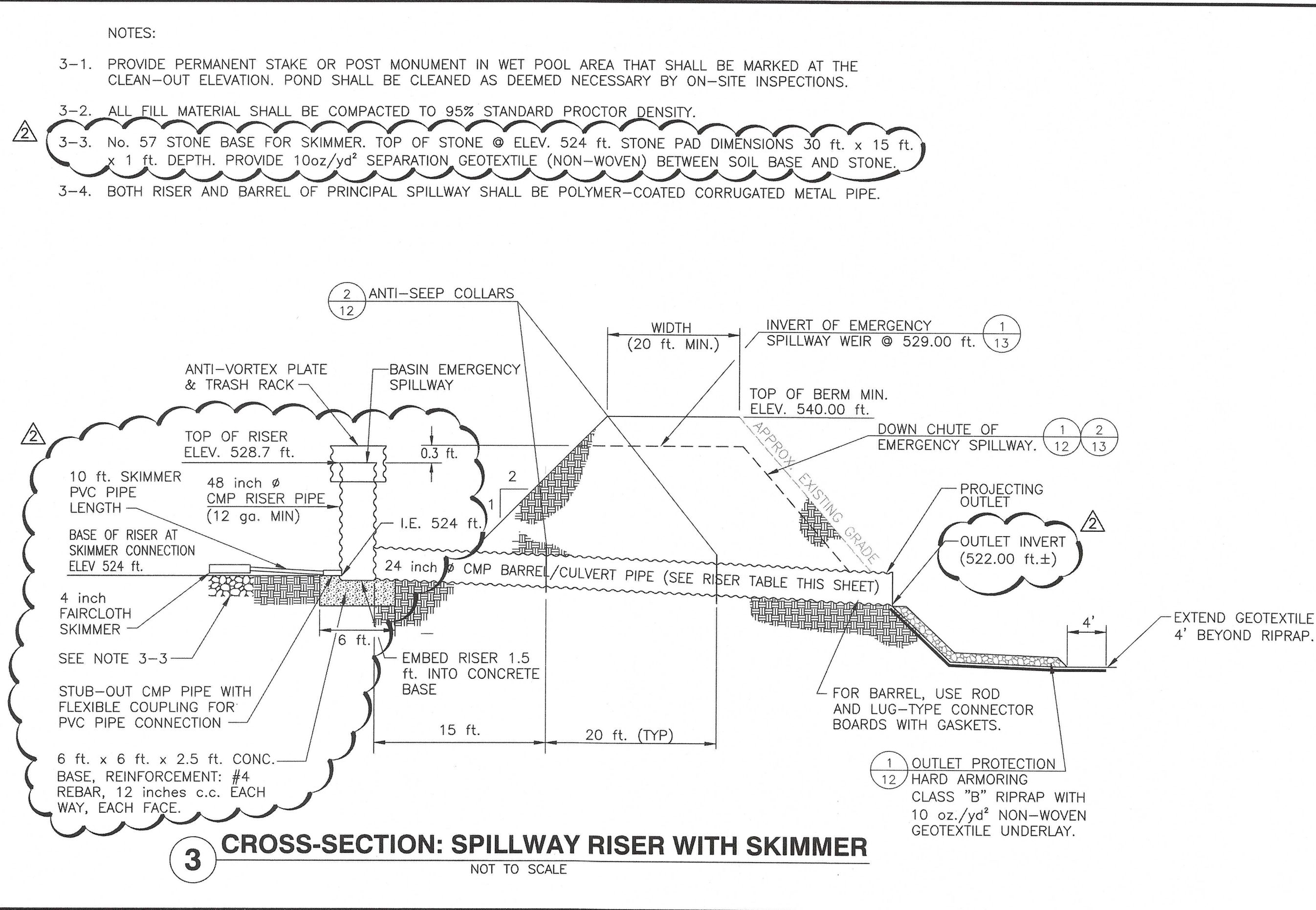
* Based on 42-year rainfall data from Memphis for water quality modeling of basin performance using WinDetPond software.
^^Emergency spillway flow is zero for this phase
Average % solids retained for all storms is estimated via modeling is 87%

Emergency Scenario: Peak flow and basin water elevation was modeled assuming the riser assembly is incapacitated and that the 100 yr/24-hr storm event occurs when the basin water elevation is initially at 529 ft. Under this scenario, peak flow = 57.5 cfs; maximum basin water elevation = 529.6 ft.

Smolen, M.D., D.W. Miller, L.C. Wyatt, J. Lichthardt, and A.L. Lanier. 1988. *Erosion and Sediment Control Planning and Design Manual*. North Carolina Sedimentation Control Commission; North Carolina Department of Environment, Health, and Natural Resources; and Division of Land Resources, Land Quality Section, Raleigh, NC.

PRINCIPAL RISER SPILLWAY TABLE						
RISER SPILLWAY	PIPE	RISER DIA. (in.)	BARRELL DIA. (in.)	BARREL LENGTH (ft.)	BARREL SLOPE (%)	BARREL OUTLET I.E. (ft)
1	CMP	48	24	228	0.88	522.00
						528.7

NOTES:
1. THE DESIGN OF THIS BASIN IS INTENDED TO MEET THE REQUIREMENTS FOR BASINS IN THE TENNESSEE DIVISION OF SOLID WASTE MANAGEMENT REGULATIONS, RULE 0400-11-01-04(S)(i).
2. SEED, FERTILIZE AND COVER WITH EROSION-CONTROL MATTING THE INTERIOR SURFACE AREA OF PROPOSED BASIN.
3. PROVIDE ANTI-VORTEX PLATE AND TRASH RACKS ON THE RISER ASSEMBLY.
4. PROVIDE 4 inch FAIRCLOTH SKIMMER FOR RISER.
5. MAX. BASIN CONTAINMENT VOLUME AT ELEVATION 531.00 Ft. = 4.2 Ac. Ft. (185,010 FT³).
6. PROVIDE OUTLET PROTECTION (HARD ARMORING) BELOW BARREL OUTLET (TDOT CLASS "B" RIPRAP).



REVISION RECORD		DESCRIPTION
NO.	DATE	
1	08/01/15	REVISED SPILLWAY AND DOWN CHUTE DRAWING AND DETAILS
2	08/25/15	REVISED TABLES, DETAILS AND RMC NOTES

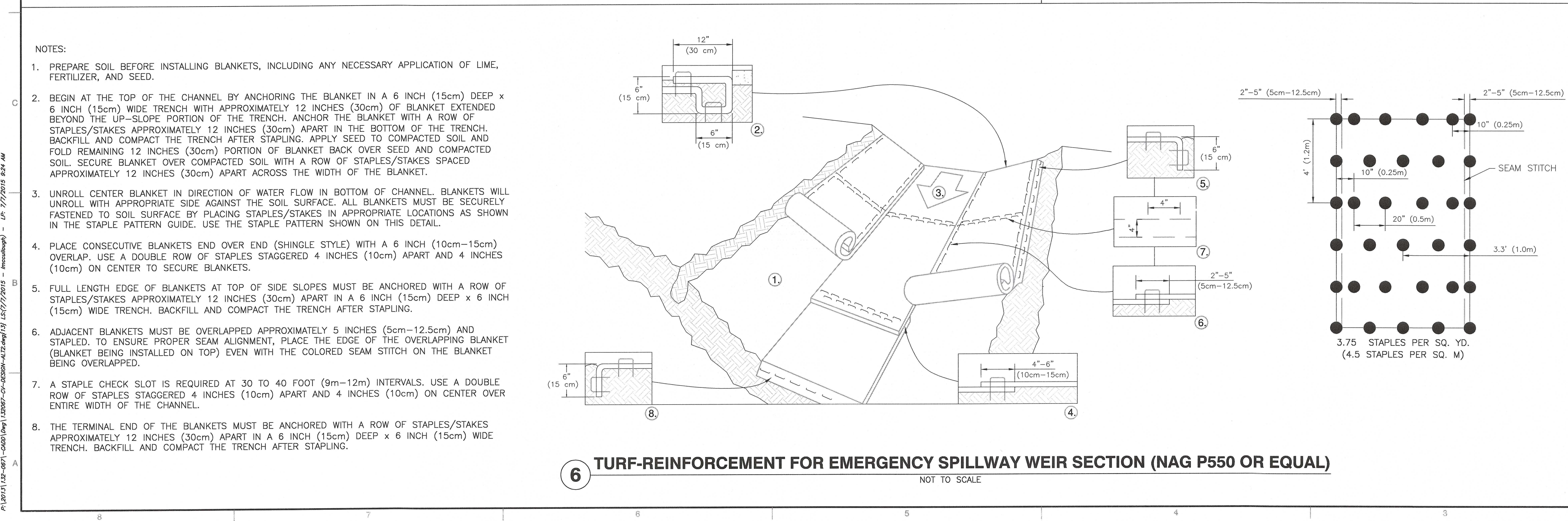
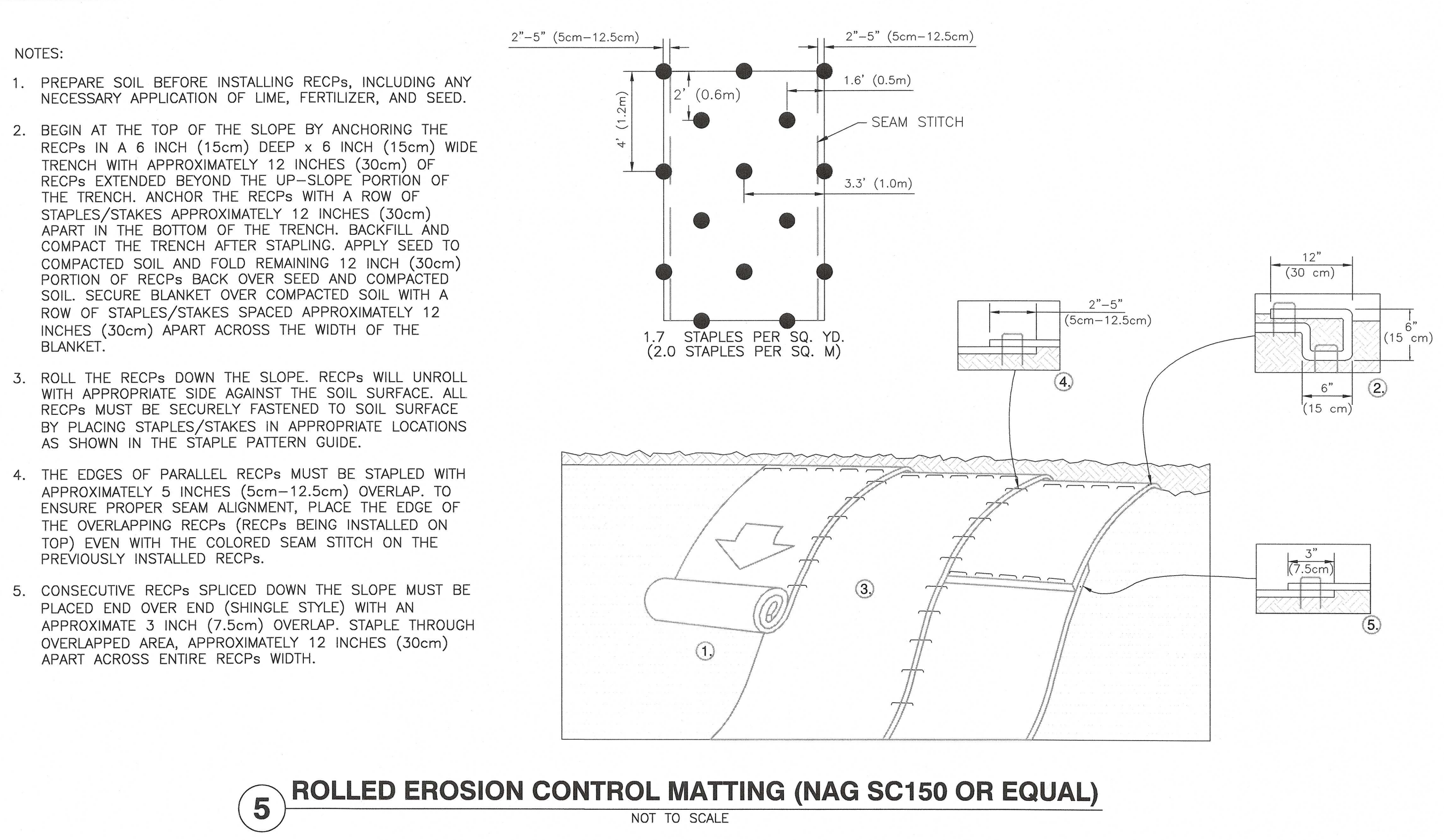
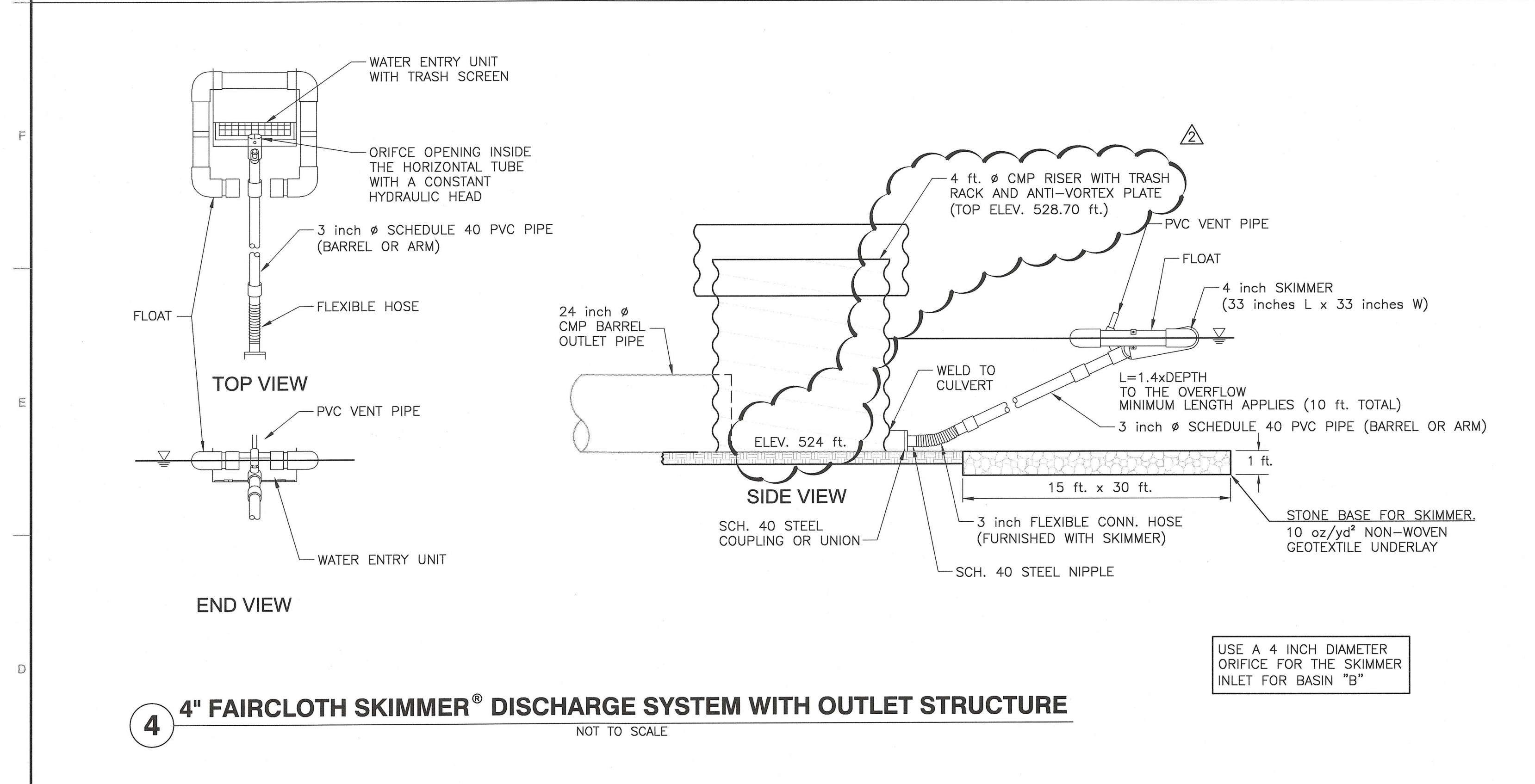
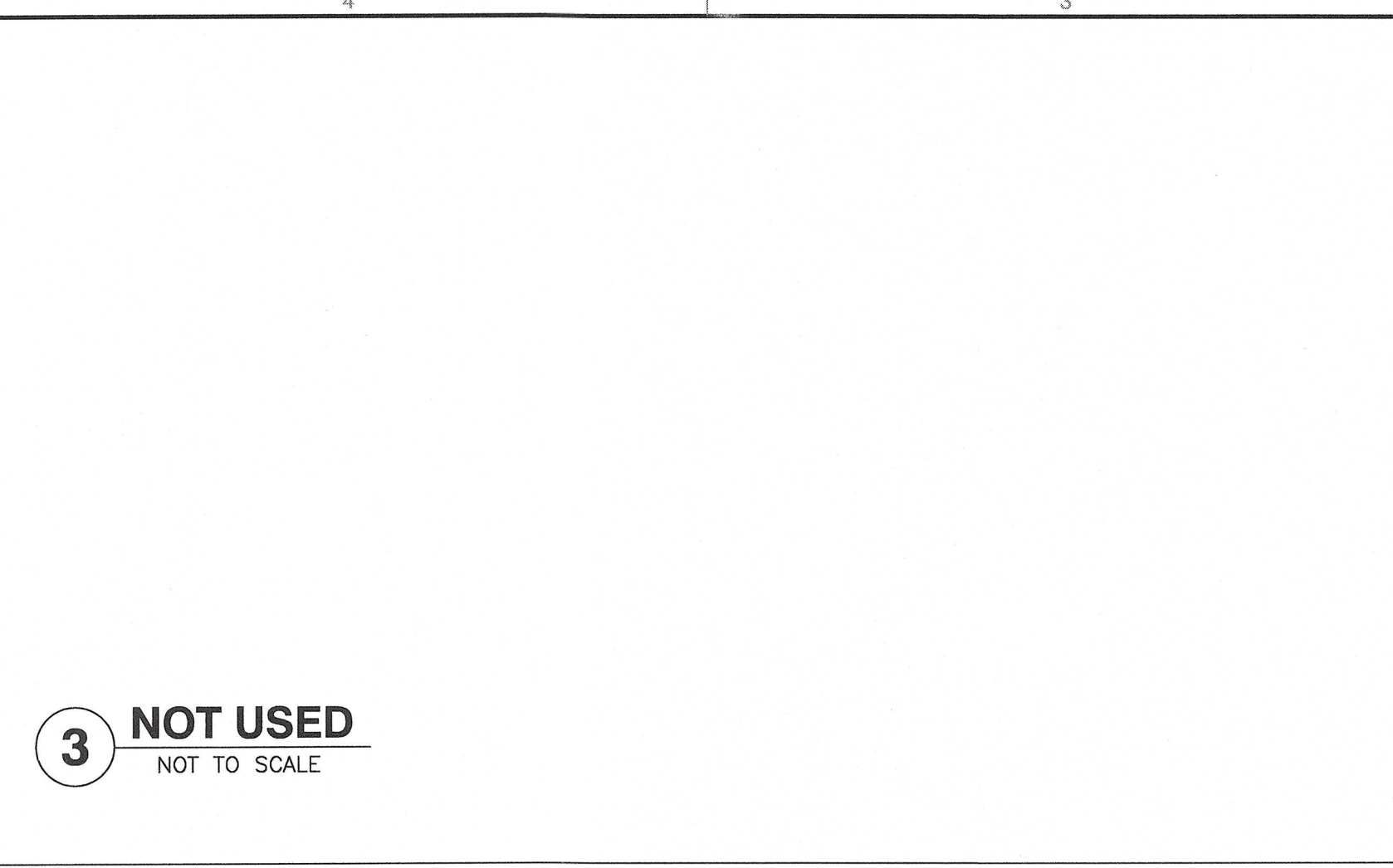
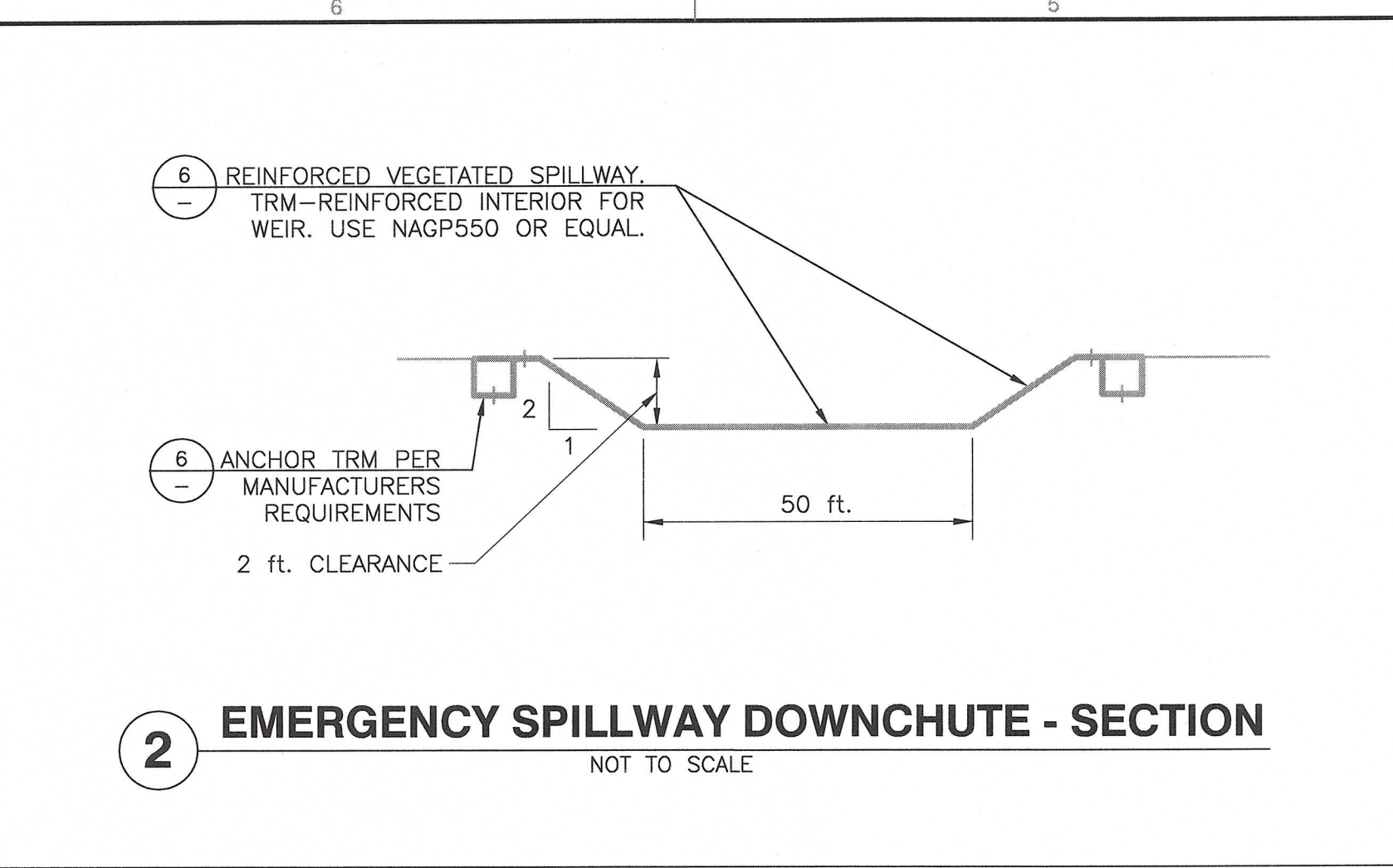
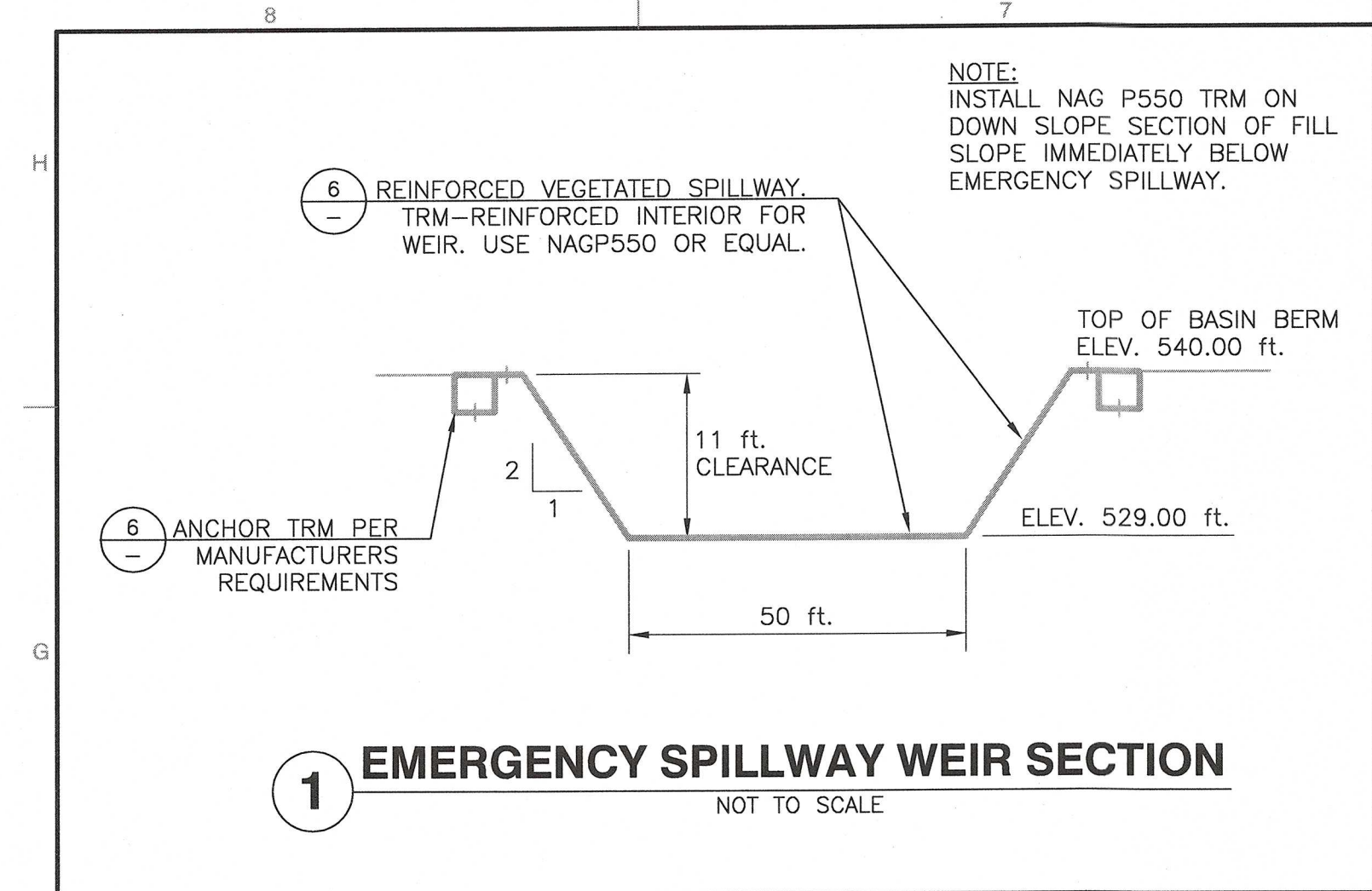
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BASIN B PLAN AND DETAILS

DRAWING NO.: **12**
SHEET OF

DATE: OCTOBER 2014
DWS SCALE: AS NOTED
PROJECT NO.: 132-067
APPROVED BY: KBW



REVISION RECORD	
NO	DATE
1	04/01/15
2	06/02/15

DESCRIPTION
1 REVISED SPILLWAY AND DOWNCHUTE GRADING AND DETAILS
2 REVISED DETAIL 4

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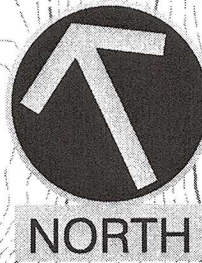
BASIN B DETAILS

DATE: OCTOBER 2014
DRAWN BY: LM
CHECKED BY: SEC
PROJECT NO: 132-067
APPROVED BY: KBW

DRAWING NO.: **13**
SHEET OF

KEVIN B. WOLFE
REGISTERED ENGINEER
NO. 022247
STATE OF TENNESSEE

A:\2015\12-0671-C001\DWG\120067-C0-00300-A12.dwg[14] LS(1/7/2015 9:24 AM) - LP: 1/7/2015 9:24 AM



NORTH

1 PLAN VIEW - SEDIMENT BASIN "C"

1" = 50'

TDOT CLASS 15 "C" RIPRAP

INLET I.E. = 510.00 ft
OUTLET I.E. = 509 ft
SLOPE = 1.1%
LENGTH = 88 ft

NOTE:
BOTTOM OF
BASIN @
ELEV. 507'

30'x15'x1' STONE BASE
BENEATH SKIMMER ZONE

4" RISER

510.00 ft.
SHELF

ADD NAG SC150 TRM OR
EQUAL TO BASIN SLOPES
AND VEGETATE SLOPES.
ALSO VEGETATE BOTTOM
OF BASIN.

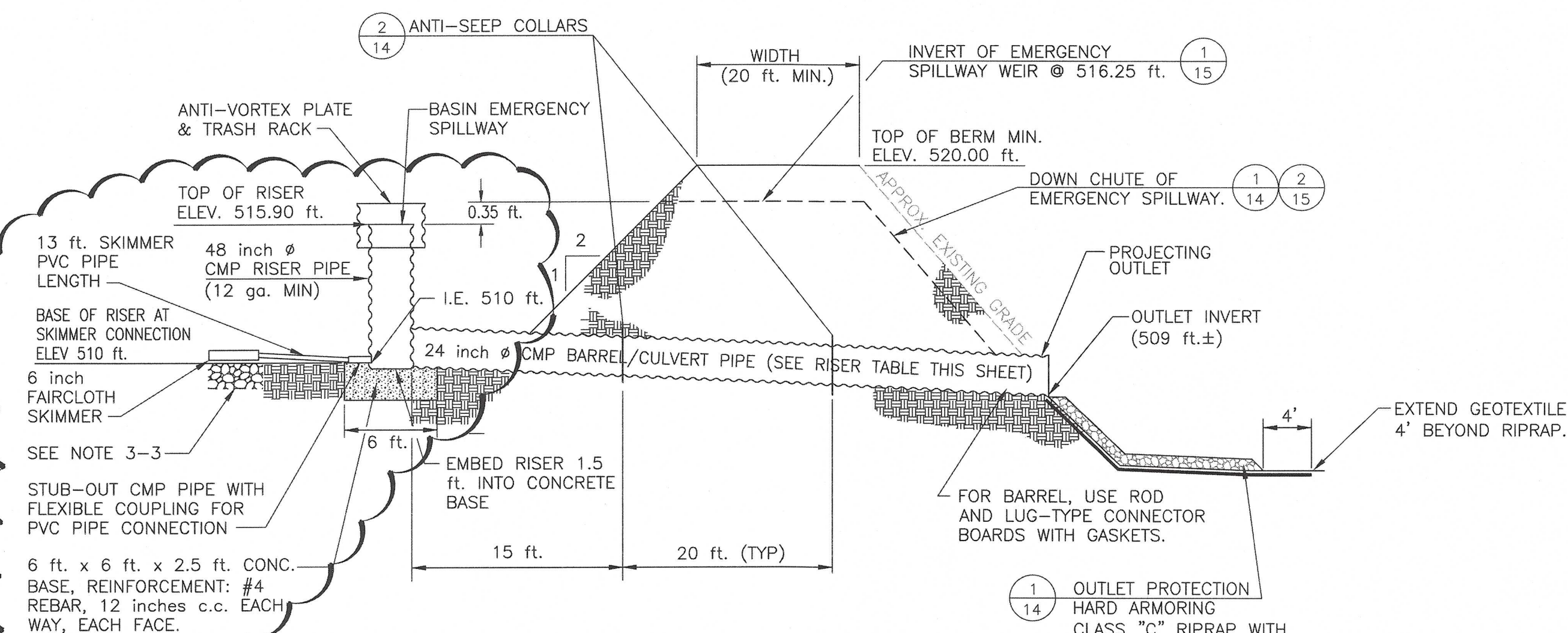
CLASS "C" TDOT RIPRAP
@ OUTLET OF CULVERT
(3.5 ft. THICKNESS)
WITH 10 oz./yd²
NON-WOVEN GEOTEXTILE
UNDERLAY.

NAG P550 COVERAGE (OR EQUAL)

NAG SC 150 COVERAGE (OR EQUAL)

NOTES:

1. PROVIDE PERMANENT STAKE OR POST MONUMENT IN WET POOL AREA THAT SHALL BE MARKED AT THE CLEAN-OUT ELEVATION. POND SHALL BE CLEANED AS DEEMED NECESSARY BY ON-SITE INSPECTIONS.
2. ALL FILL MATERIAL SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
3. No. 57 STONE BASE FOR SKIMMER. TOP OF STONE @ ELEV. 510 ft. STONE PAD 30' LONG BY 15' WIDE x 1 ft. DEPTH. PROVIDE 10oz/yd² SEPARATION GEOTEXTILE (NON-WOVEN) BETWEEN SOIL BASE AND STONE.
4. BOTH RISER AND BARREL OF PRINCIPAL SPILLWAY SHALL BE POLYMER-COATED CORRUGATED METAL PIPE.



3 CROSS-SECTION: SPILLWAY RISER WITH SKIMMER

NOT TO SCALE

Sediment Basin "C" Design Information (Final Grade Phase)		5 Year/24-Hr	25 Year/24-Hr	100 Year/24-Hr
Runoff Volume (ft ³)		180,121	267,905	349,867
Peak Inflow into Basin (ft ³ /sec)		64	95	122
Minimum Required Surface Area of Basin based on Barfield and Clar, in Smolen et al., 1988 (ft ²) as Required in TDEC EPSC Manual		27,878	N/A	N/A
Basin Surface Area at Riser Crest Elevation (ft ²)		51,167	N/A	N/A
TDEC-Required Dry and Wet Storage Volumes (ft ³)		31,875 (wet) 31,875 (dry)	31,875 (wet) 31,875 (dry)	31,875 (wet) 31,875 (dry)
Actual wet and dry storage provided (ft ³)		111,273 (wet) 267,356 (dry)	111,273 (wet) 267,356 (dry)	111,273 (wet) 267,356 (dry)
Estimated Peak Detained Water Elevation in Basin (ft.)		513.54 (Min. 5.4' Freeboard considering 1 ft. settlement)	515.33 (Min. 3.6' Freeboard considering 1 ft. settlement)	516.04 (Min. 3.0' Freeboard considering 1 ft. settlement)
Estimate of Peak Discharge Through Barrel (ft ³ /sec) (Including Skimmer Discharge)		0.6	0.6	2.9
Total Discharge from Skimmer (ft ³ /sec)		0.6	0.6	0.6
Total Peak Discharge Flow Rate from Basin (ft ³ /sec) (Including flow through Emergency Spillway)		0.6^^	0.6^^	2.9^^
Reduction in Peak Flow Due to Basin (%)		99	99	98
Max. Upflow Flux During Skimmer Dewatering (ft ³ /sec/ft ²)		1.4 E-05	8.90E-05	4.10E-04
Flow-Weighted Avg. Ideal Particle Size Retained (microns)*		2.5	2.5	2.6
Estimated Maximum Time to Drain Basin Volume Via Skimmers To Wet Pool Elevation (Days)		2.9	4.6	5.3

* Based on 42-year rainfall data from Memphis for water quality modeling of basin performance using WinDetPond software.
^^Emergency spillway flow is zero for this phase

Average % solids retained for all storms is estimated via modeling is 87%

Emergency Scenario: Peak flow and basin water elevation was modeled assuming the riser assembly is incapacitated and that the 100 yr/24-hr storm event occurs when the basin water elevation is initially at 516.25 ft. Under this scenario, peak flow = 116 cfs ; maximum basin water elevation = 517.2 ft.

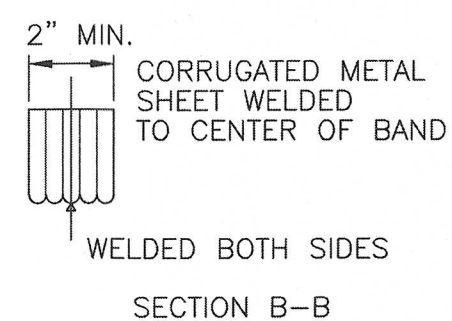
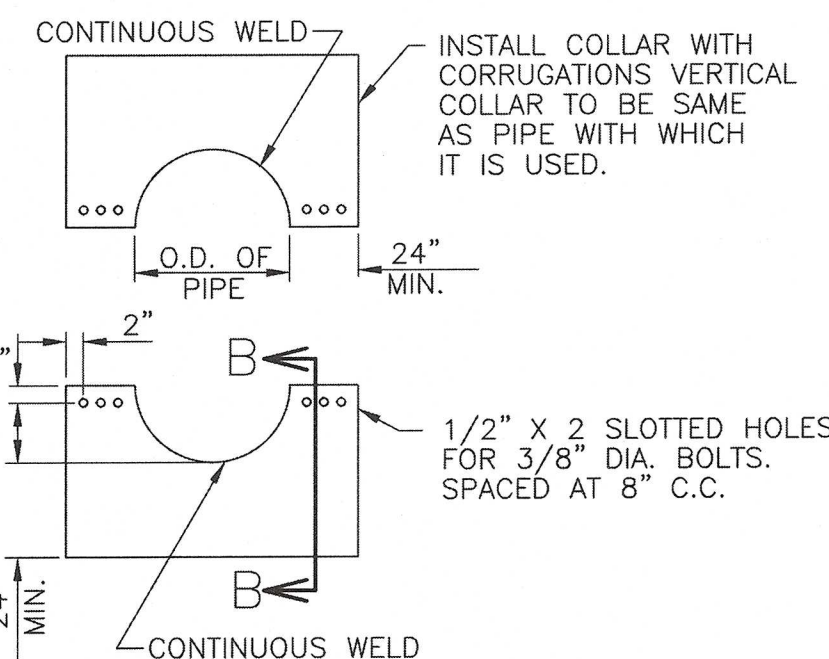
Smolen, M.D., D.W. Miller, L.C. Wyatt, J. Lichthardt, and A.L. Lanier. 1988. *Erosion and Sediment Control Planning and Design Manual*. North Carolina Sedimentation Control Commission; North Carolina Department of Environment, Health, and Natural Resources; and Division of Land Resources, Land Quality Section, Raleigh, NC.

PRINCIPAL RISER SPILLWAY TABLE

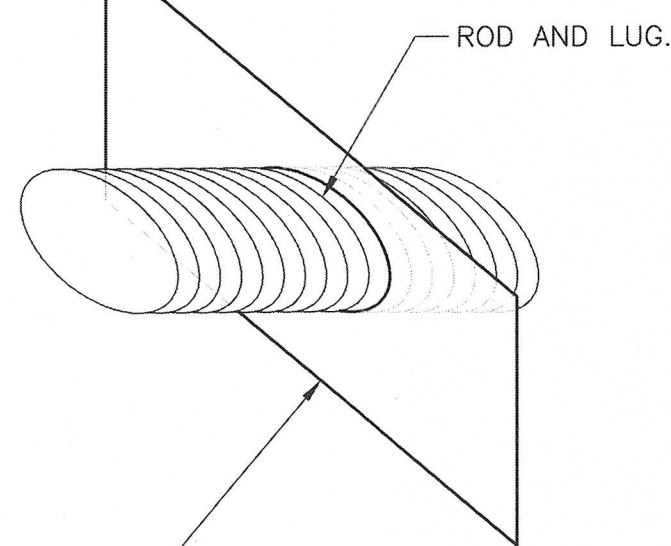
RISER SPILLWAY	PIPE	RISER DIA. (in.)	BARRELL DIA. (in.)	BARRELL LENGTH (ft.)	BARRELL SLOPE (%)	BARRELL OUTLET I.E. (ft)	TOP OF RISER
I	CMP	48	24	88	1.1	509.00	515.90

NOTES:

1. THE DESIGN OF THIS BASIN IS INTENDED TO MEET THE REQUIREMENTS FOR BASINS IN THE TENNESSEE DIVISION OF SOLID WASTE MANAGEMENT REGULATIONS, RULE 0400-11-01-04(S)(i).
2. SEED, FERTILIZE AND COVER WITH EROSION-CONTROL MATTING THE INTERIOR SURFACE AREA OF PROPOSED BASIN.
3. PROVIDE ANTI-VORTEX PLATE AND TRASH RACKS ON THE RISER ASSEMBLY.
4. PROVIDE 6 inch FAIRCLOTH SKIMMER FOR RISER.
5. MAX. BASIN CONTAINMENT VOLUME AT ELEVATION 520.00 Ft. = 14.0 Ac. Ft. (609,600 FT³).
6. PROVIDE OUTLET PROTECTION (HARD ARMORING) BELOW BARREL OUTLET (TDOT CLASS "C" RIPRAP).



WELD 1-1/8" x 1/8" x 1/8"
ANGLES TO COLLAR OR
BEND A 90 DEG ANGLE 1-1/8"
WIDE AS SHOWN IN DRAWING.



SHEET METAL COLLAR SHALL
BE CUT TO FIT CORRUGATIONS
OF HELICAL BAND AND WELDED
WITH A CONTINUOUS WELD.

NOTES FOR COLLARS:

1. ALL MATERIALS TO BE IN ACCORDANCE WITH CONSTRUCTION AND CONSTRUCTION MATERIAL SPECIFICATIONS
2. WHEN SPECIFIED ON THE PLANS, COATING OF COLLARS SHALL BE IN ACCORDANCE WITH CONSTRUCTION AND CONSTRUCTION MATERIAL SPECIFICATIONS.
3. UNASSEMBLED COLLARS SHALL BE MARKED BY PAINTING OR TAGGING TO IDENTIFY MATCHING PAIRS
4. THE LAP BETWEEN THE HALF SECTIONS AND BETWEEN THE PIPE AND CONNECTING BAND ASPHALT MASTIC AT INSTALLATION.
5. EACH COLLAR SHALL BE FURNISHED WITH TWO 1/2" DIAMETER RODS WITH STANDARD TANK LUGS FOR CONNECTING COLLARS TO PIPE.

NOTE FOR BANDS AND COLLARS:
MODIFICATIONS OF THE DETAILS SHOWN
MAY BE USED PROVIDING EQUAL
WATERTIGHTNESS IS MAINTAINED AND
DETAILED DRAWINGS ARE SUBMITTED
AND APPROVED BY THE ENGINEER
PRIOR TO DELIVERY.

NOTE: TWO OTHER TYPES OF ANTI-SEEP COLLARS ARE:

1. CORRUGATED METAL, SIMILAR TO UPPER DETAIL, EXCEPT SHOP WELDED TO UPPER DETAIL, EXCEPT SHOP WELDED TO A SHORT (4 FT) SECTION OF THE PIPE AND CONNECTED WITH CONNECTING BANDS TO THE PIPE.
2. CONCRETE, SIX INCHES THICK FORMED AROUND THE PIPE WITH #3 REBAR SPACED 15" HORIZONTALLY AND VERTICALLY.

2 ANTI SEEP COLLAR (TYP)

NOT TO SCALE

REVISION RECORD

DESCRIPTION

NO. DATE

1 08/20/15

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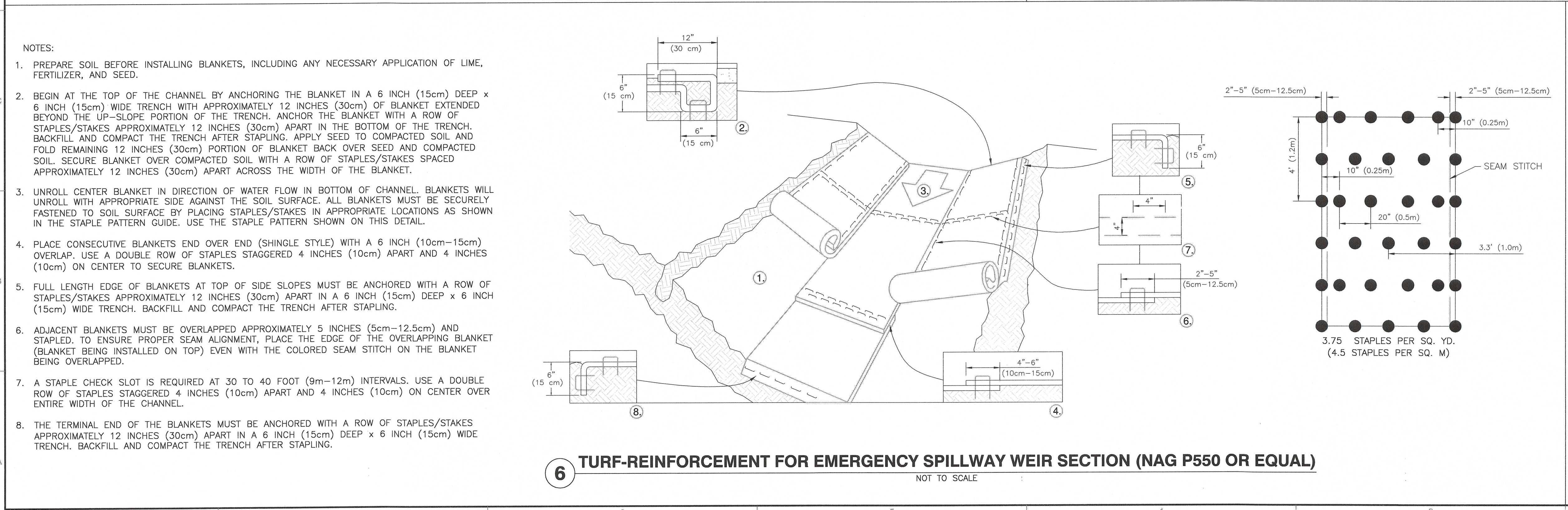
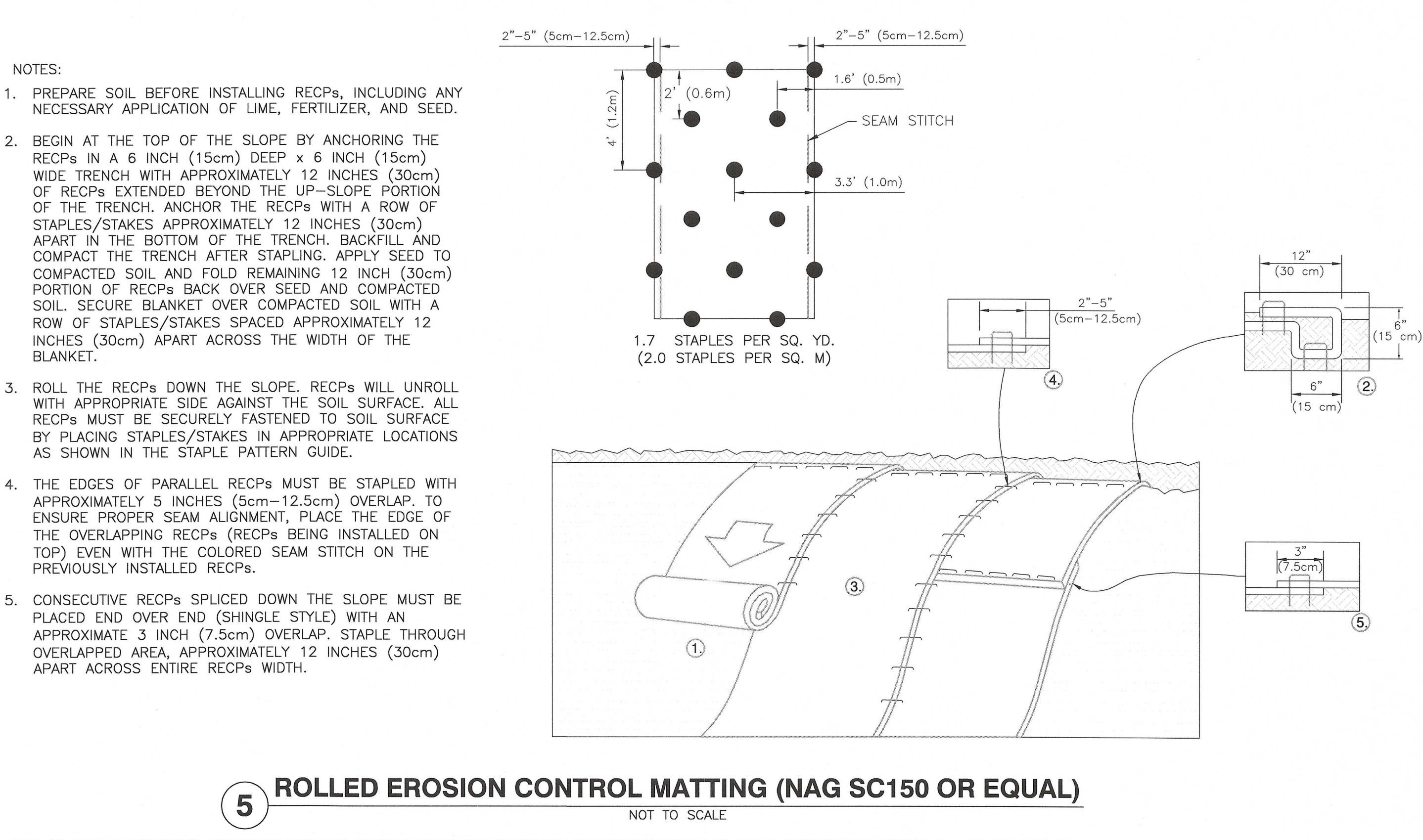
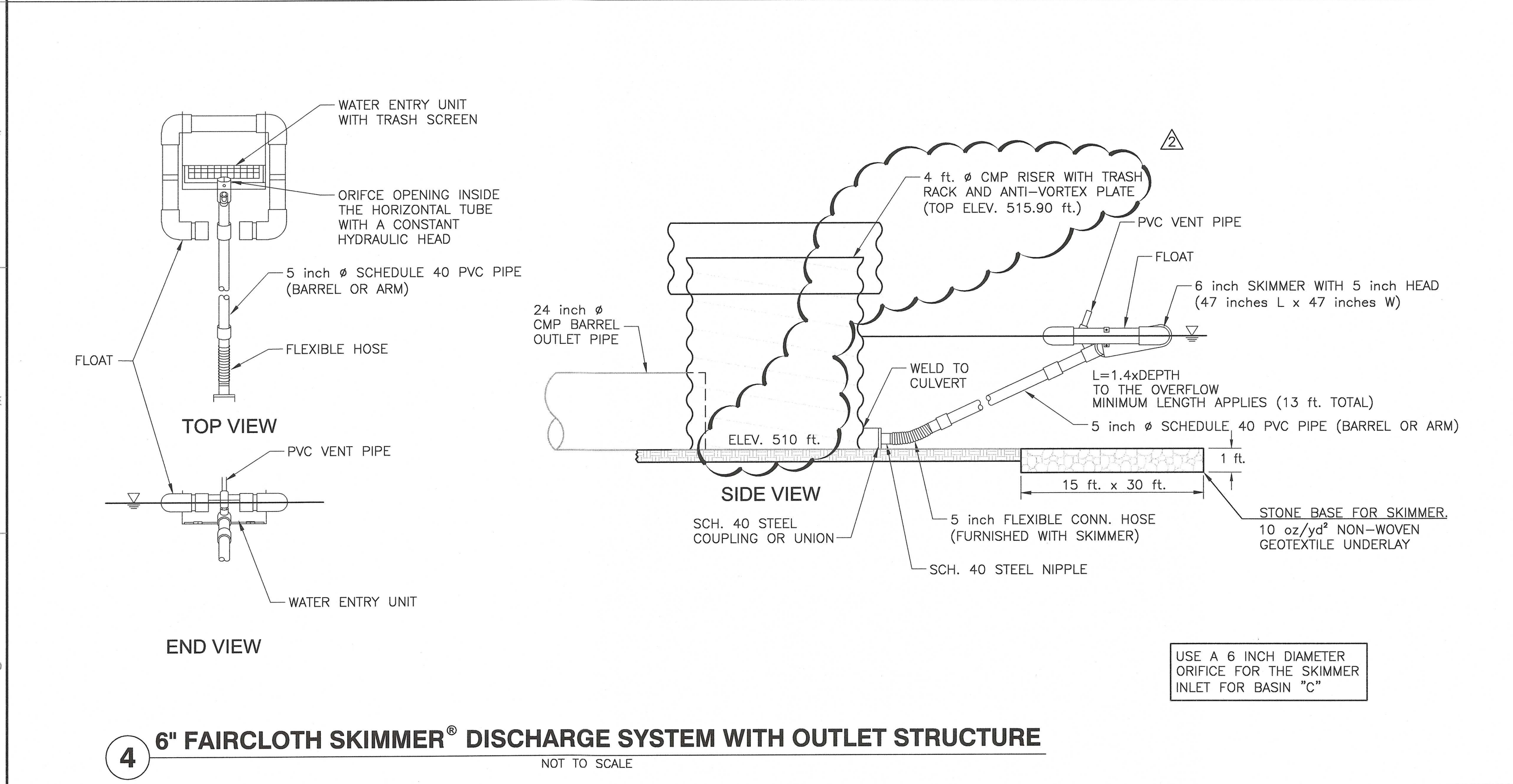
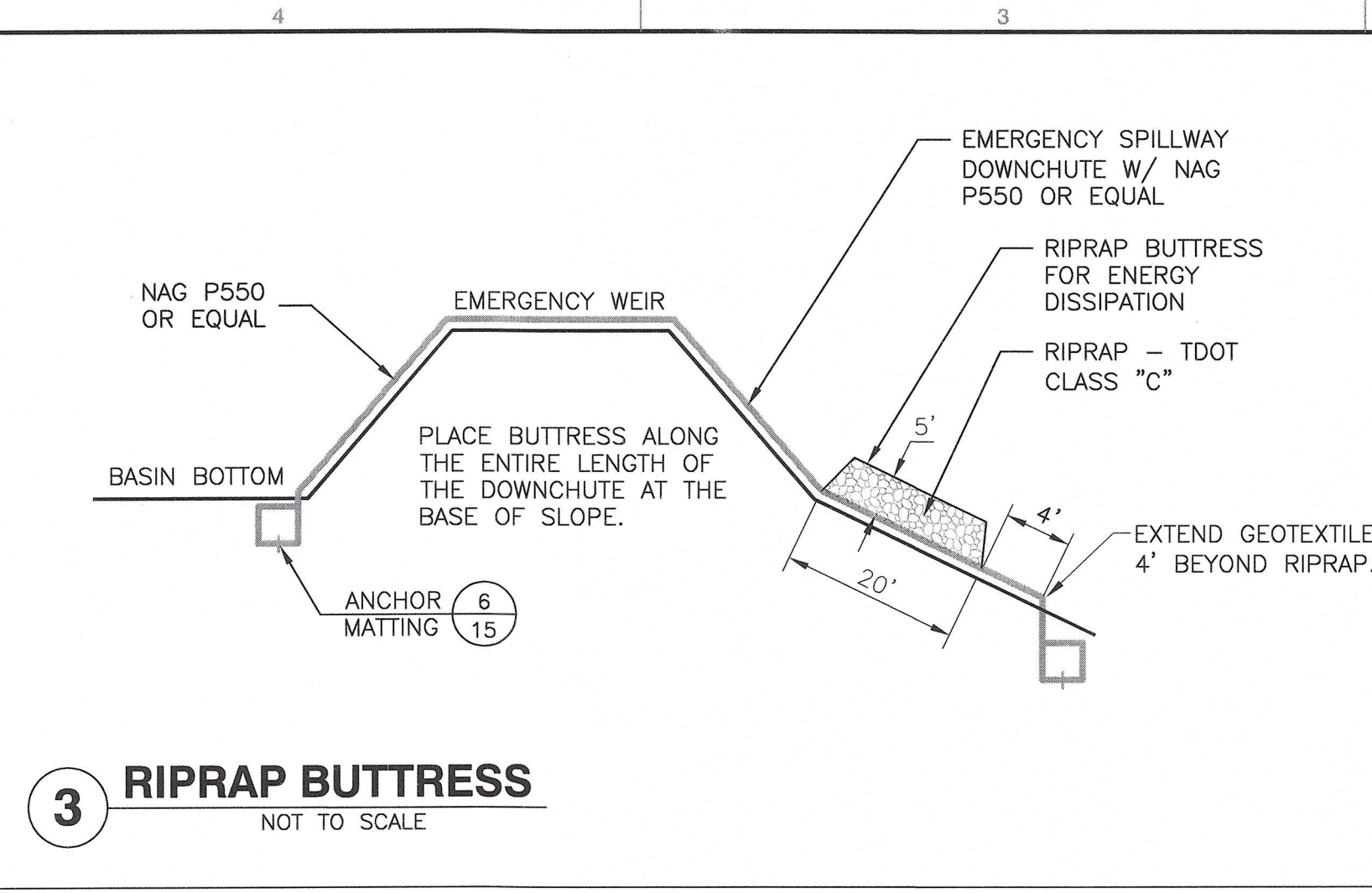
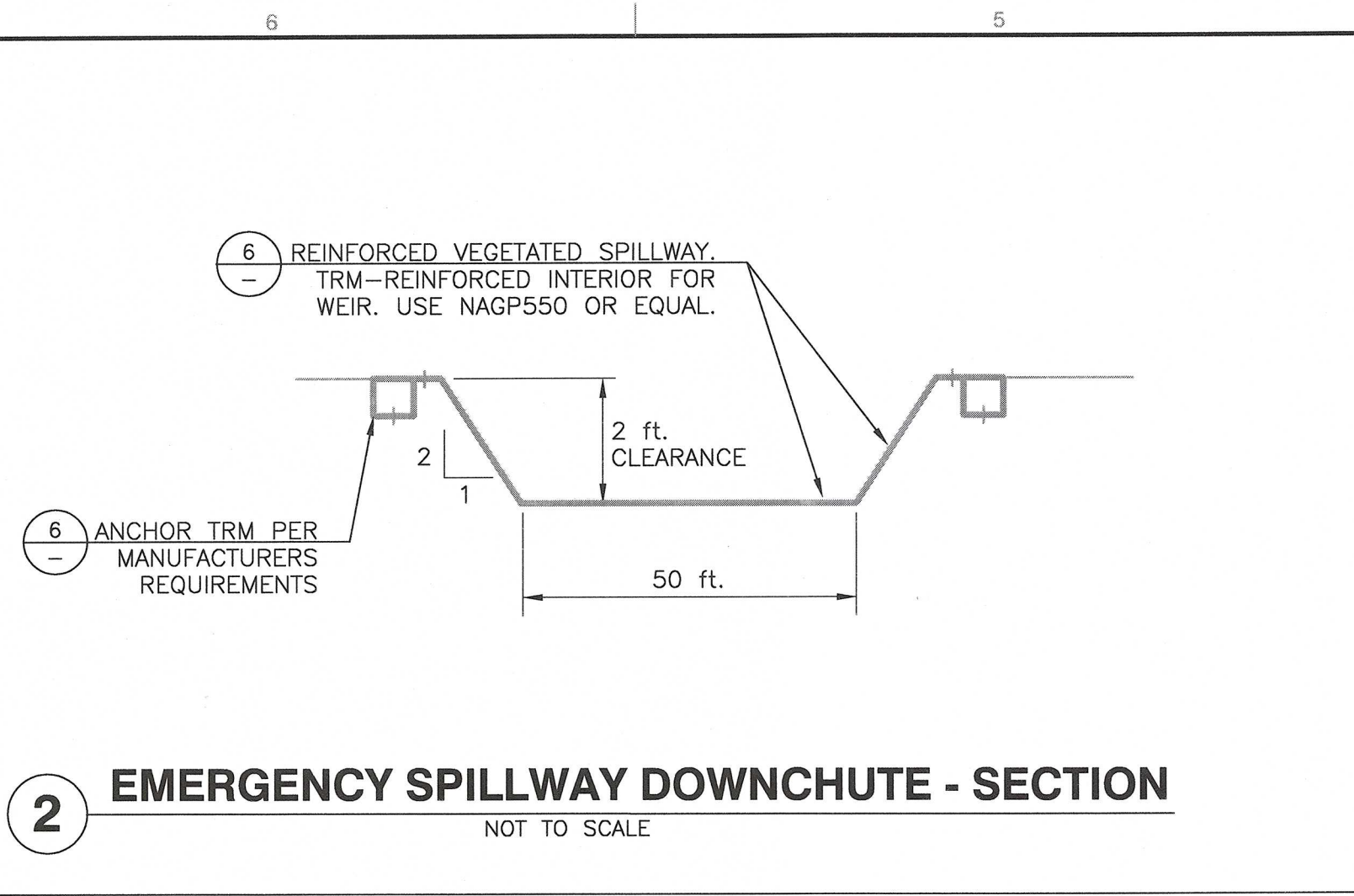
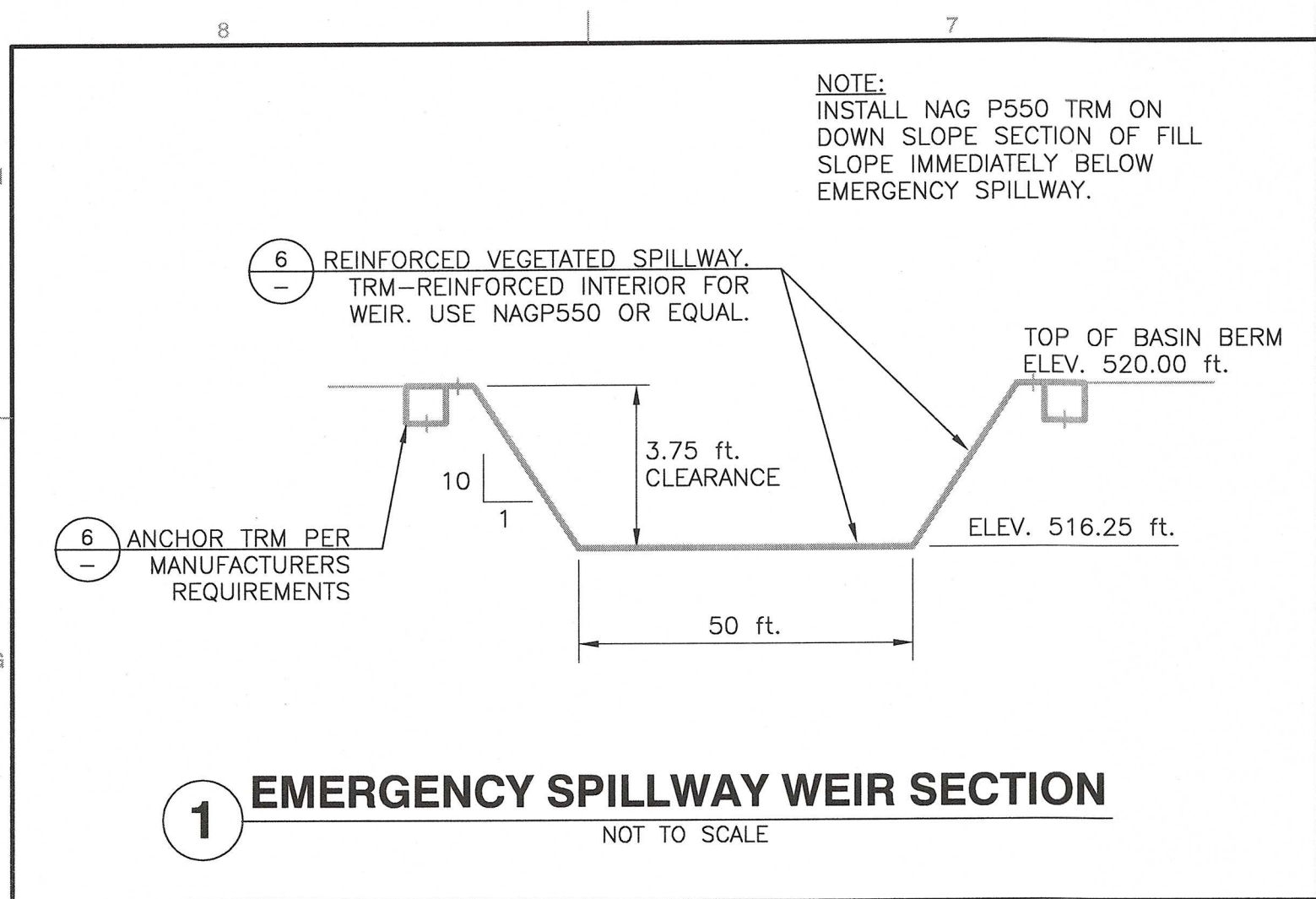
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REVISION RECORD	
NO	DATE
1	04/01/15
2	05/01/15

DESCRIPTION
REVISED SPILLWAY AND DOWN CHUTE DRAWING AND DETAILS
REVISED DETAIL 4

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325 Seaboard Lane - Suite 170 - Franklin, TN 37067
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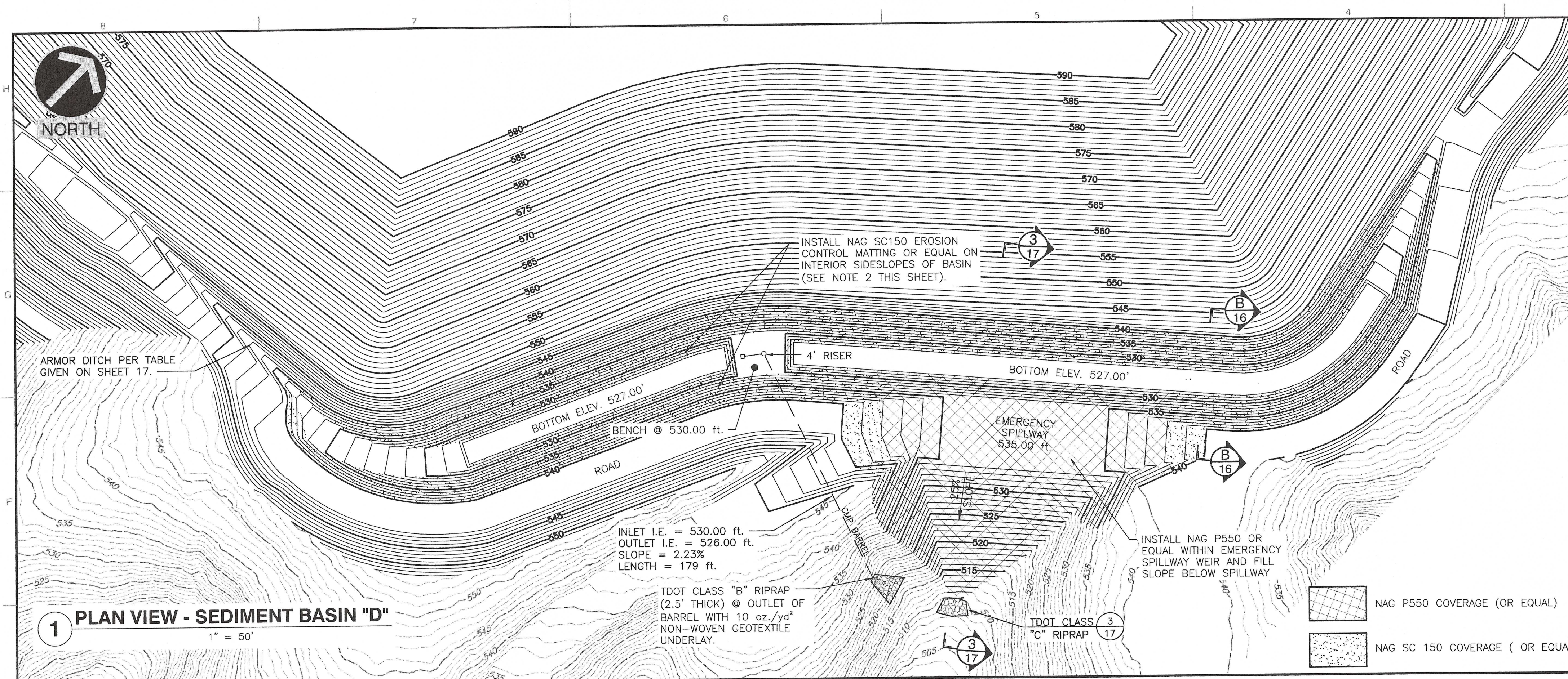
PACKAGING CORPORATION OF AMERICA
PROPOSED CLASS II LANDFILL
PERMIT DRAWINGS

BASIN C DETAILS

DATE: OCTOBER 2014
DRAWN BY: LM
CHECKED BY: SEC
PROJECT NO: 132-067
APPROVED BY: KBW

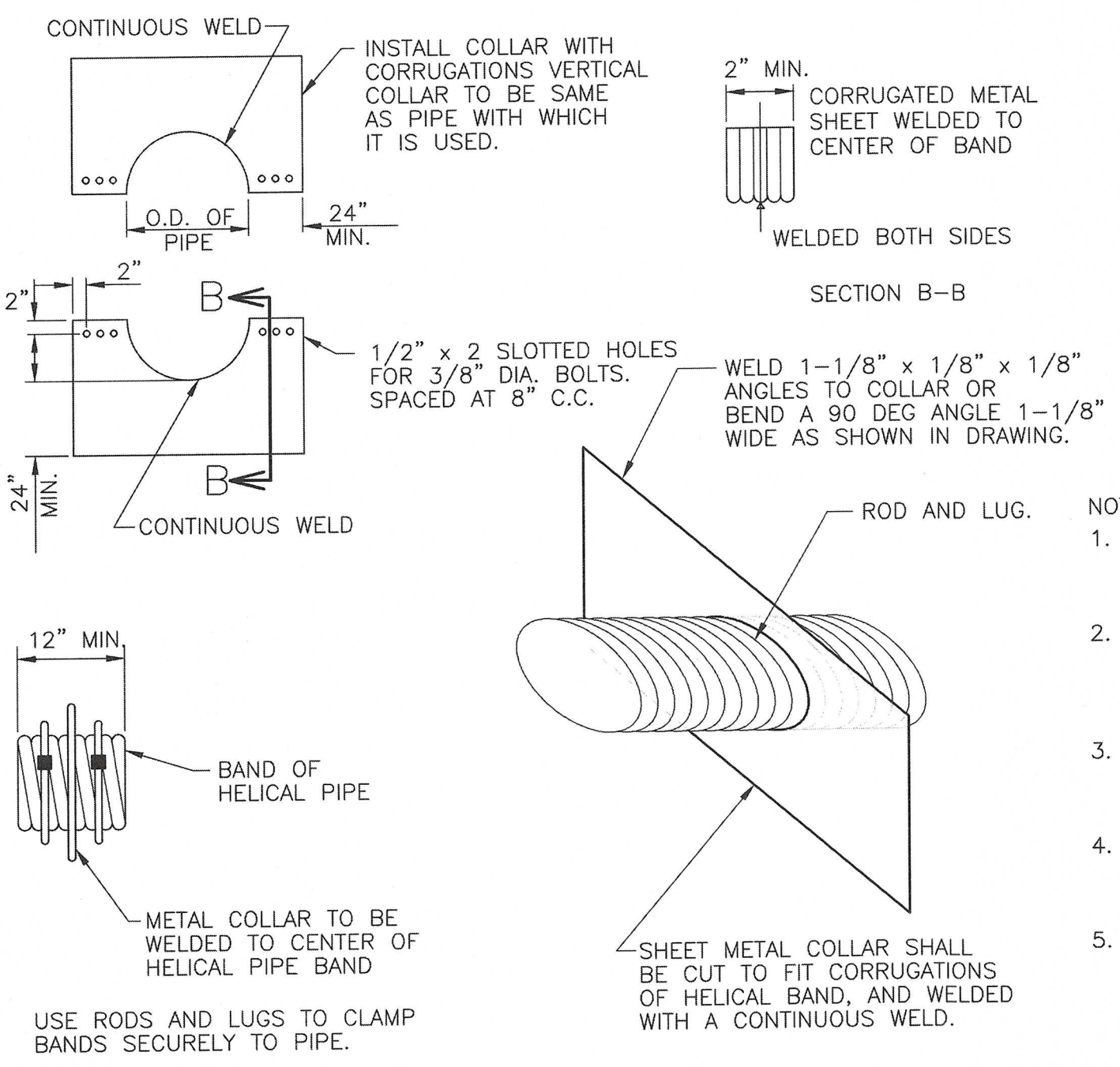
DRAWING NO.:
15
SHEET OF

STATE OF TENNESSEE
KEVIN B. WOLFE
REGISTERED ENGINEER
No. 022317
EXPIRATION DATE 12/31/15



1 PLAN VIEW - SEDIMENT BASIN "D"
1" = 50'

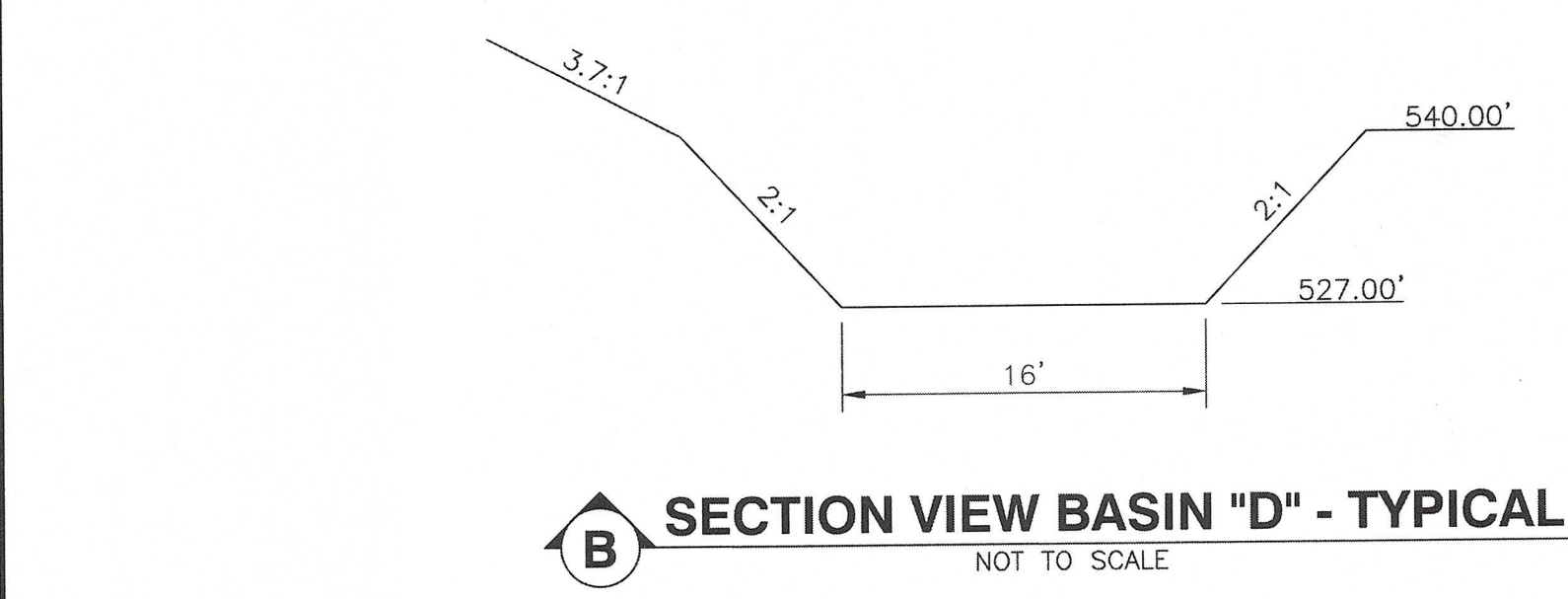
- NOTES:
- THE DESIGN OF THIS BASIN IS INTENDED TO MEET THE REQUIREMENTS FOR BASINS IN THE TENNESSEE DIVISION OF SOLID WASTE MANAGEMENT REGULATIONS, RULE 0400-11-01-04(S)(i).
 - SEED, FERTILIZE AND COVER WITH EROSION-CONTROL MATTING THE INTERIOR SURFACE AREA OF PROPOSED BASIN.
 - PROVIDE ANTI-VORTEX PLATE AND TRASH RACKS ON THE RISER ASSEMBLY.
 - PROVIDE 5 inch FAIRCLOTH SKIMMER FOR RISER.
 - MAX. BASIN CONTAINMENT VOLUME AT ELEVATION 537.00 Ft. = 6.7 Ac. Ft. (289,924 FT³).
 - PROVIDE OUTLET PROTECTION (HARD ARMORING) BELOW BARREL OUTLET (TDOT CLASS "C" RIPRAP).



2 ANTI SEEP COLLAR (TYP)
NOT TO SCALE

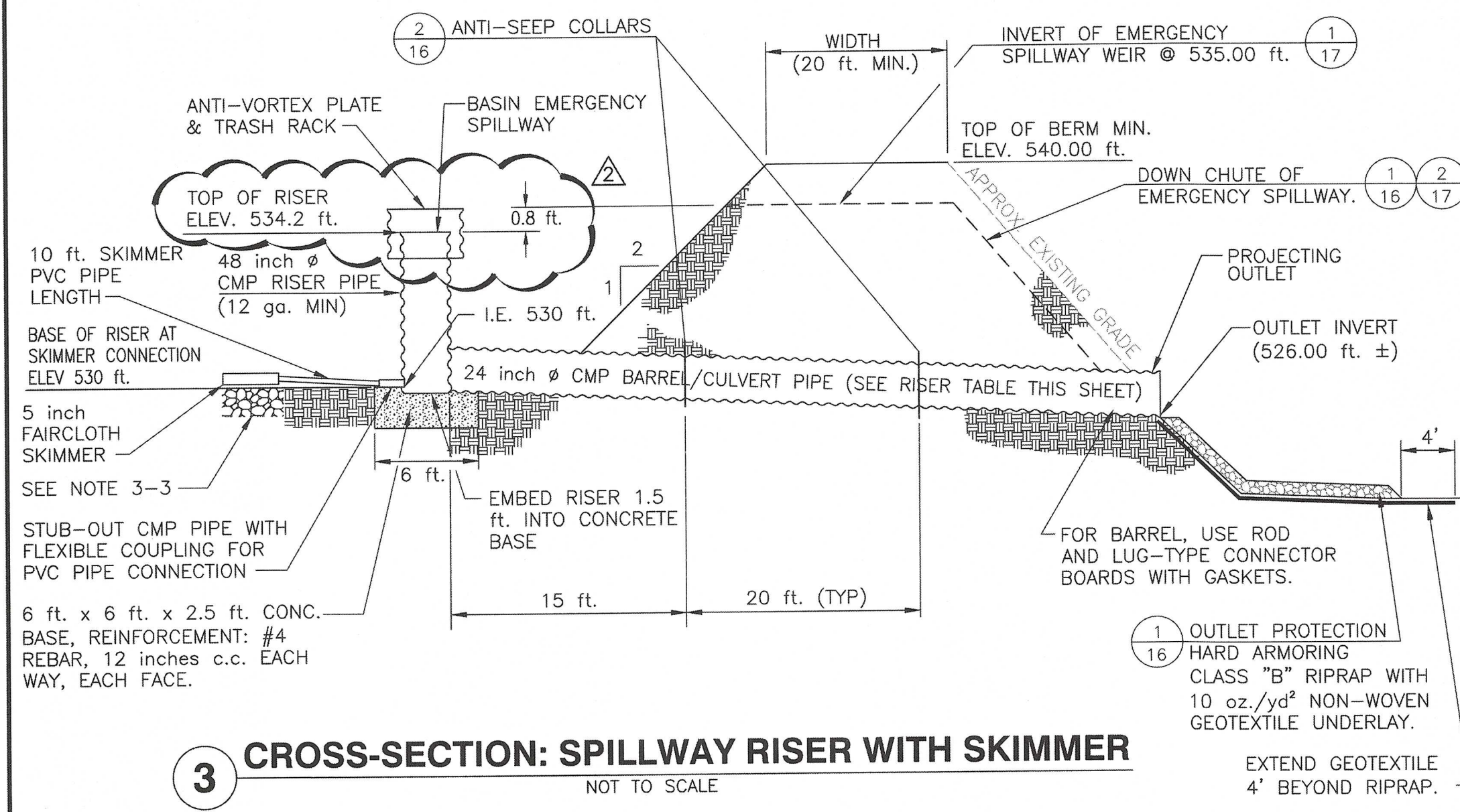
- NOTE: TWO OTHER TYPES OF ANTI-SEEP COLLARS ARE:
- CORRUGATED METAL, SIMILAR TO UPPER DETAIL, EXCEPT SHOP WELDED TO UPPER DETAIL, EXCEPT SHOP WELDED TO A SHORT (4 FT) SECTION OF THE PIPE AND CONNECTED WITH CONNECTING BANDS TO THE PIPE.
 - CONCRETE, SIX INCHES THICK FORMED AROUND THE PIPE WITH #3 REBAR SPACED 15" HORIZONTALLY AND VERTICALLY.

- NOTES FOR COLLARS:
- ALL MATERIALS TO BE IN ACCORDANCE WITH CONSTRUCTION AND CONSTRUCTION MATERIAL SPECIFICATIONS
 - WHEN SPECIFIED ON THE PLANS, COATING OF COLLARS SHALL BE IN ACCORDANCE WITH CONSTRUCTION AND CONSTRUCTION MATERIAL SPECIFICATIONS.
 - UNASSEMBLED COLLARS SHALL BE MARKED BY PAINTING OR TAGGING TO IDENTIFY MATCHING PAIRS
 - THE LAP BETWEEN THE HALF SECTIONS AND BETWEEN THE PIPE AND CONNECTING BAND ASPHALT MASTIC AT INSTALLATION.
 - EACH COLLAR SHALL BE FURNISHED WITH TWO 1/2" DIAMETER RODS WITH STANDARD TANK LUGS FOR CONNECTING COLLARS TO PIPE.
- NOTE FOR BANDS AND COLLARS: MODIFICATIONS OF THE DETAILS SHOWN MAY BE USED PROVIDING EQUAL WATER TIGHTNESS IS MAINTAINED AND DETAILED DRAWINGS ARE SUBMITTED AND APPROVED BY THE ENGINEER PRIOR TO DELIVERY.



B SECTION VIEW BASIN "D" - TYPICAL
NOT TO SCALE

- NOTES:
- PROVIDE PERMANENT STAKE OR POST MONUMENT IN WET POOL AREA THAT SHALL BE MARKED AT THE CLEAN-OUT ELEVATION. POND SHALL BE CLEANED AS DEEMED NECESSARY BY ON-SITE INSPECTIONS.
 - ALL FILL MATERIAL SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
 - No. 57 STONE BASE FOR SKIMMER. TOP OF STONE @ ELEV. 530 ft. STONE PAD DIMENSIONS 6 ft. x 6 ft. x 1 ft. DEPTH. PROVIDE 10oz/yd² SEPARATION GEOTEXTILE (NON-WOVEN) BETWEEN SOIL BASE AND STONE.
 - BOTH RISER AND BARREL OF PRINCIPAL SPILLWAY SHALL BE POLYMER-COATED CORRUGATED METAL PIPE.



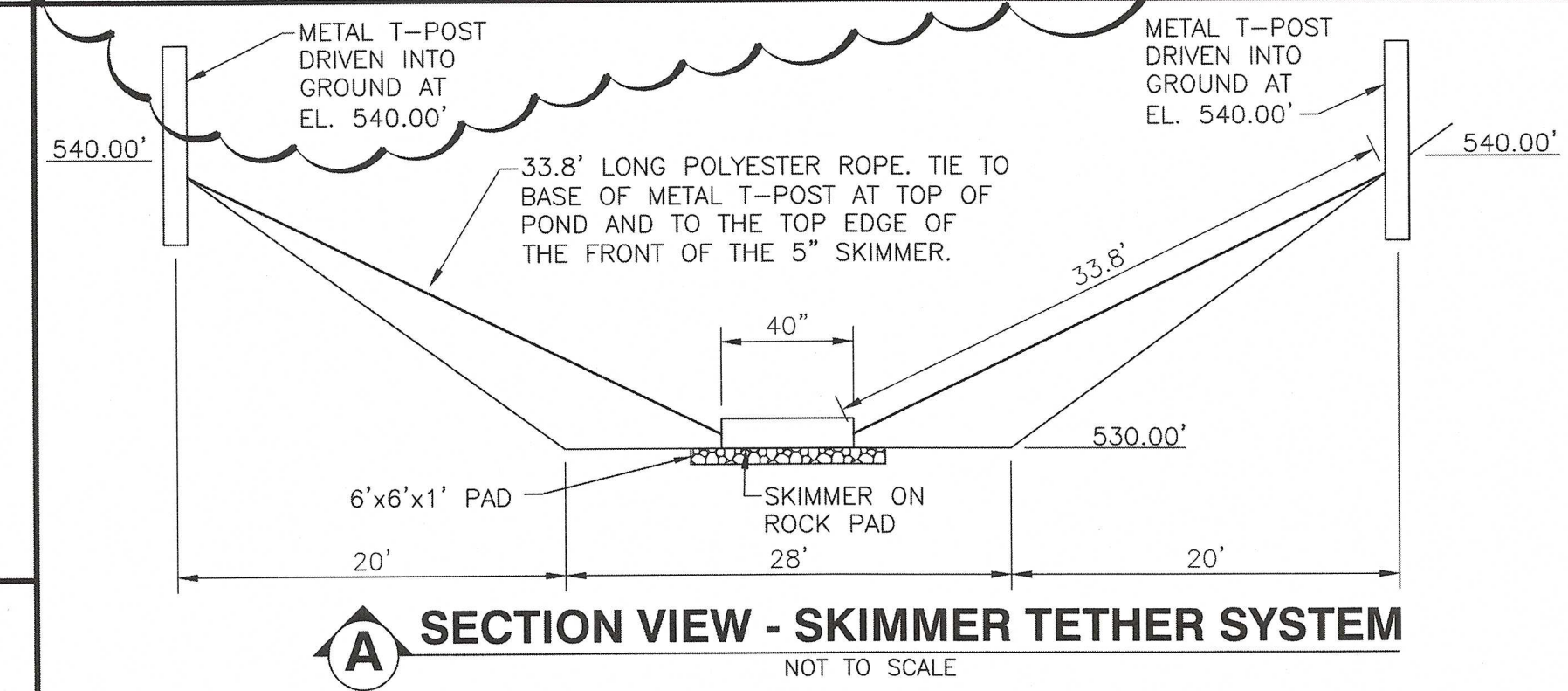
3 CROSS-SECTION: SPILLWAY RISER WITH SKIMMER
NOT TO SCALE

Sediment Basin "D" Design Information (Final Grades Phase)	5 Year/24-Hr	25 Year/24-Hr	100 Year/24-Hr
Runoff Volume (ft ³)	81,146	119,046	154,226
Peak Inflow into Basin (ft ³ /sec)	31	45	58
Minimum Required Surface Area of Basin based on Barfield and Clar, in Smolen et al., 1988 (ft ²) as Required in TDEC EPSC Manual	13,504	N/A	N/A
Basin Surface Area at Riser Crest Elevation (ft ²)	37,247	N/A	N/A
TDEC-Required Dry and Wet Storage Volumes (ft ³)	12,753 (wet) 12,753 (dry)	12,753 (wet) 12,753 (dry)	12,753 (wet) 12,753 (dry)
Actual wet and dry storage provided (ft ³)	47,611 (wet) 121,992 (dry)	47,611 (wet) 121,992 (dry)	47,611 (wet) 121,992 (dry)
Estimated Peak Detained Water Elevation in Basin (ft.)	532.47 (Min. 6.5' Freeboard considering 1 ft. settlement)	533.61 (Min. 5.4' Freeboard considering 1 ft. settlement)	534.25 (Min. 4.7' Freeboard considering 1 ft. settlement)
Estimate of Peak Discharge Through Barrel (ft ³ /sec) (Including Skimmer Discharge)	0.38	0.38	1
Total Discharge from Skimmer (ft ³ /sec)	0.38	0.38	0.38
Total Peak Discharge Flow Rate from Basin (ft ³ /sec) (Including flow through Emergency Spillway)	0.38 ^{AA}	0.38 ^{AA}	1.0 ^{AA}
Reduction in Peak Flow Due to Basin (%)	99	99	98
Max. Upflow Flux During Skimmer Dewatering (ft ³ /sec/ft ²)	1.8 E-05	4.00E-05	1.60E-04
Flow-Weighted Avg. Ideal Particle Size Retained (microns)*	2.5	2.6	2.6
Estimated Maximum Time to Drain Basin Volume Via Skimmers To Wet Pool Elevation (Days)	2	3	3.8

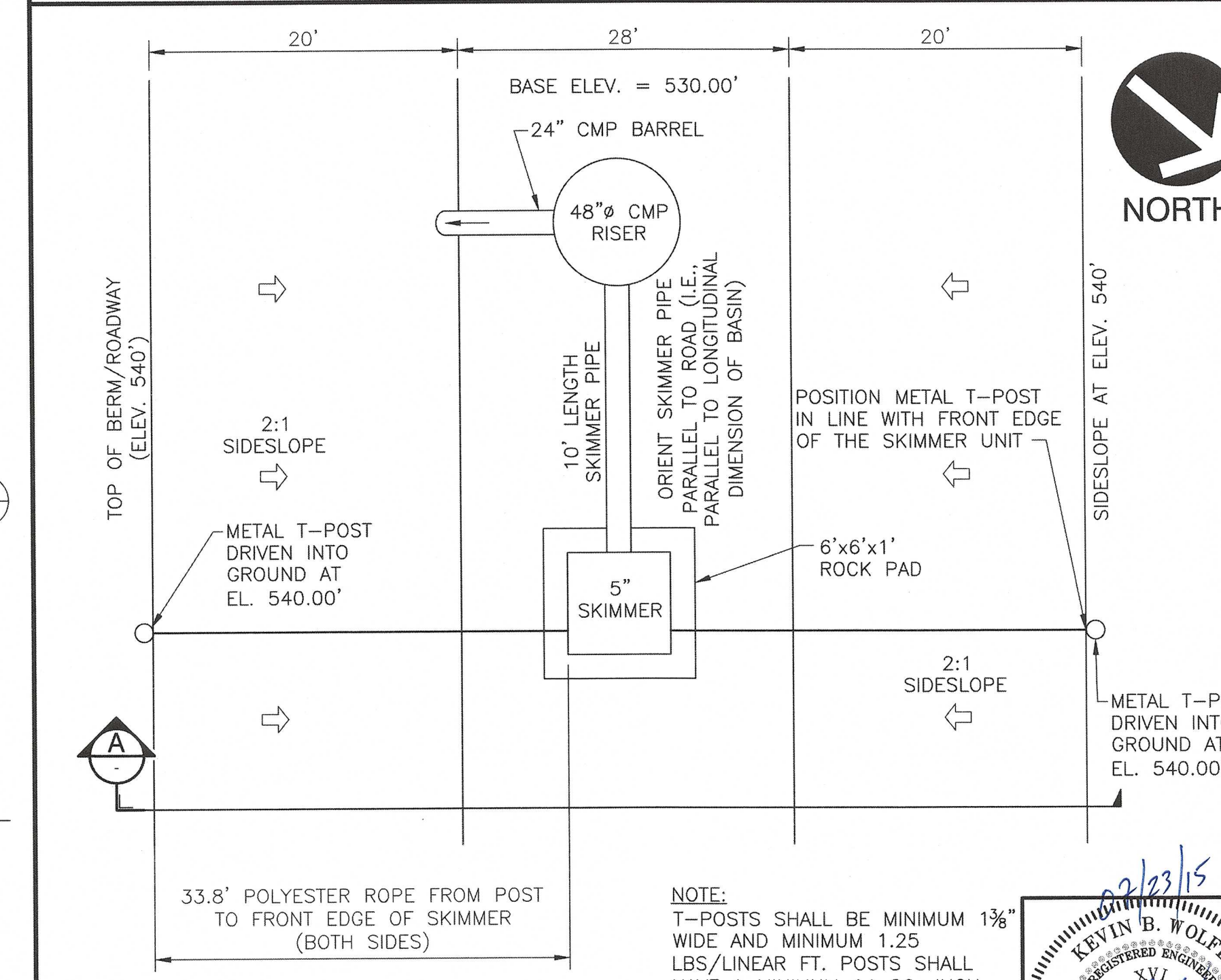
* Based on 42-year rainfall data from Memphis for water quality modeling of basin performance using WinDetPond software.
^{AA}Emergency spillway flow is zero for this phase
Average % solids retained for all storms is estimated via modeling is between 87 %

Emergency Scenario: Peak flow and basin water elevation was modeled assuming the riser assembly is incapacitated and that the 100 yr/24-hr storm event occurs when the basin water elevation is initially at 535 ft. Under this scenario, peak flow = 61.07 cfs ; maximum basin water elevation = 535.34 ft.

PRINCIPAL RISER SPILLWAY TABLE							
RISER SPILLWAY	PIPE	RISER DIA. (in.)	BARRELL DIA. (in.)	BARRELL LENGTH (ft.)	BARRELL SLOPE (%)	BARREL OUTLET I.E. (ft)	TOP OF RISER
I	CMP	48	24	179	2.23	526.00	534.2

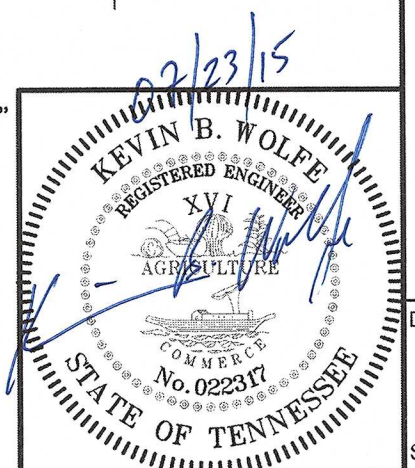


A SECTION VIEW - SKIMMER TETHER SYSTEM
NOT TO SCALE



4 PLAN VIEW - SKIMMER SYSTEM
NOT TO SCALE

NOTE: T-POSTS SHALL BE MINIMUM 1 1/2" WIDE AND MINIMUM 1.25 LBS/LINEAR FT. POSTS SHALL HAVE A MINIMUM 14 SQ. INCH ANCHOR PLATE.



REVISION RECORD

NO.	DATE	DESCRIPTION
1	04/01/15	REVISED SPILLWAY AND DOWN CHUTE GROUNDING AND DETAILS
2	06/20/15	REVISED TABLES AND DETAILS

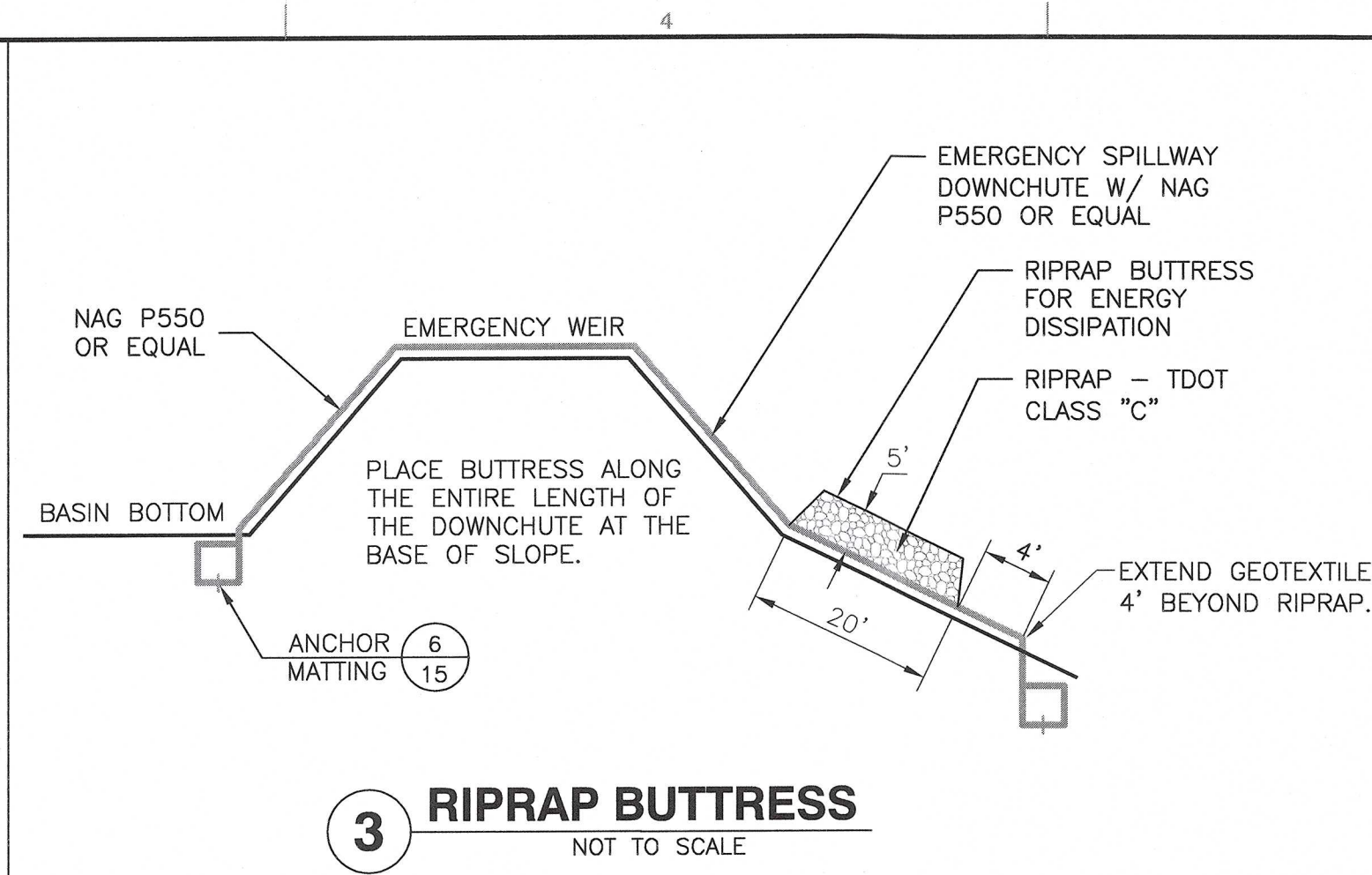
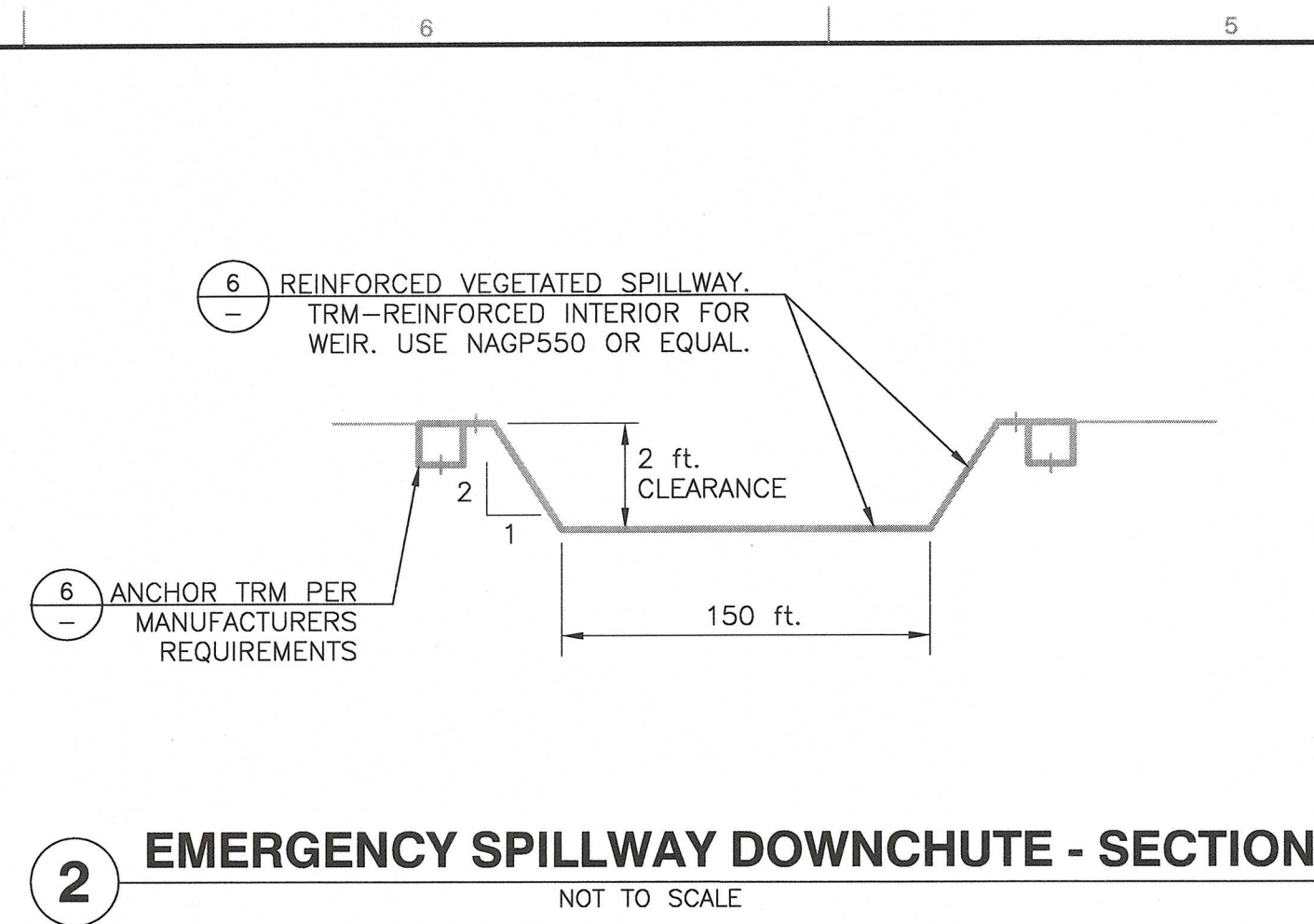
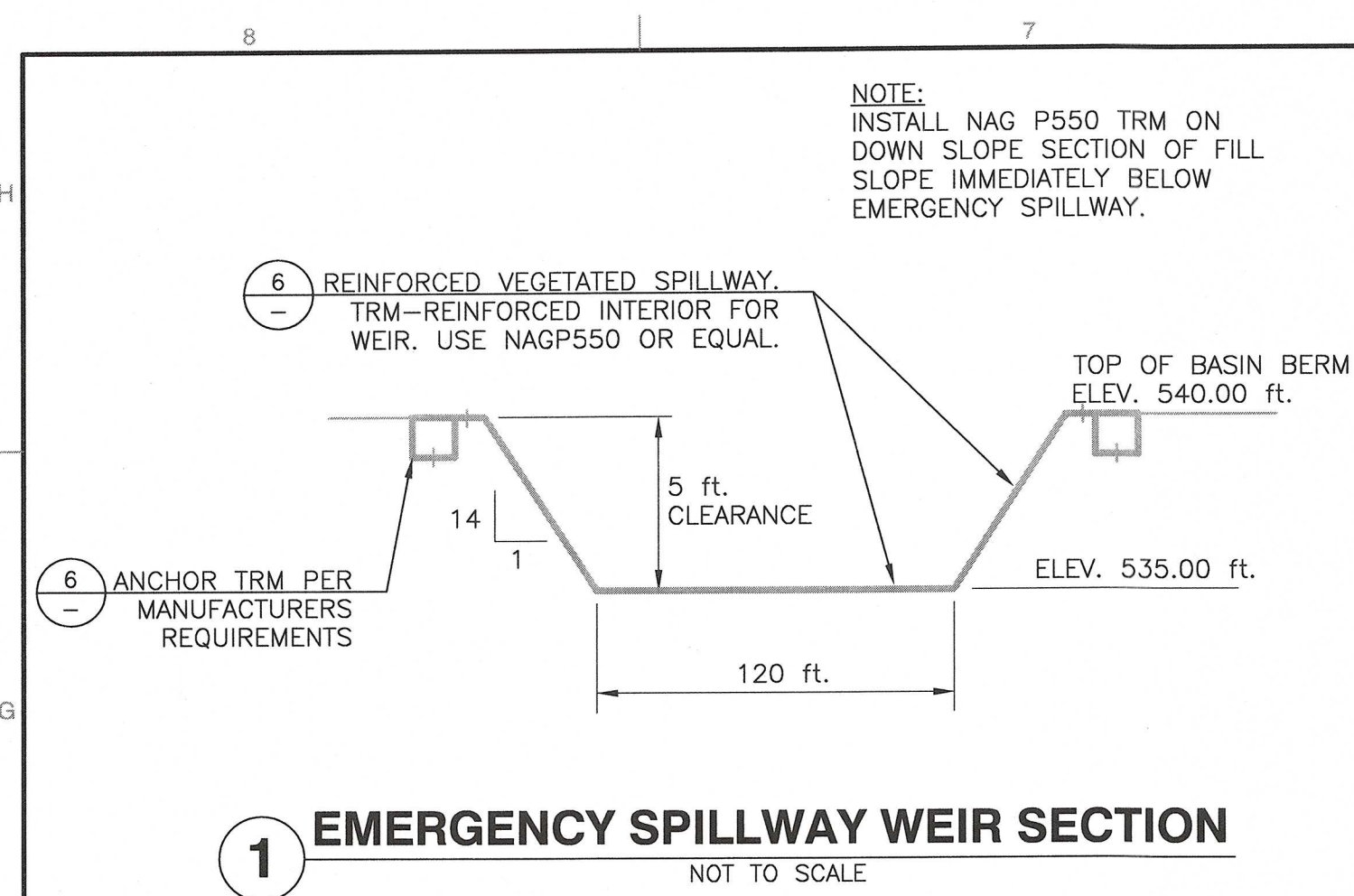
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PACKAGING CORPORATION OF AMERICA
PROPOSED CLASS II LANDFILL
PERMIT DRAWINGS

BASIN D PLAN AND DETAILS

DATE:	OCTOBER 2014	DRAWN BY:	LM
DWG. SCALE:	AS NOTED	CHECKED BY:	SEC
PROJECT NO.:	132-067	APPROVED BY:	KBW

DRAWING NO. 16
SHEET OF



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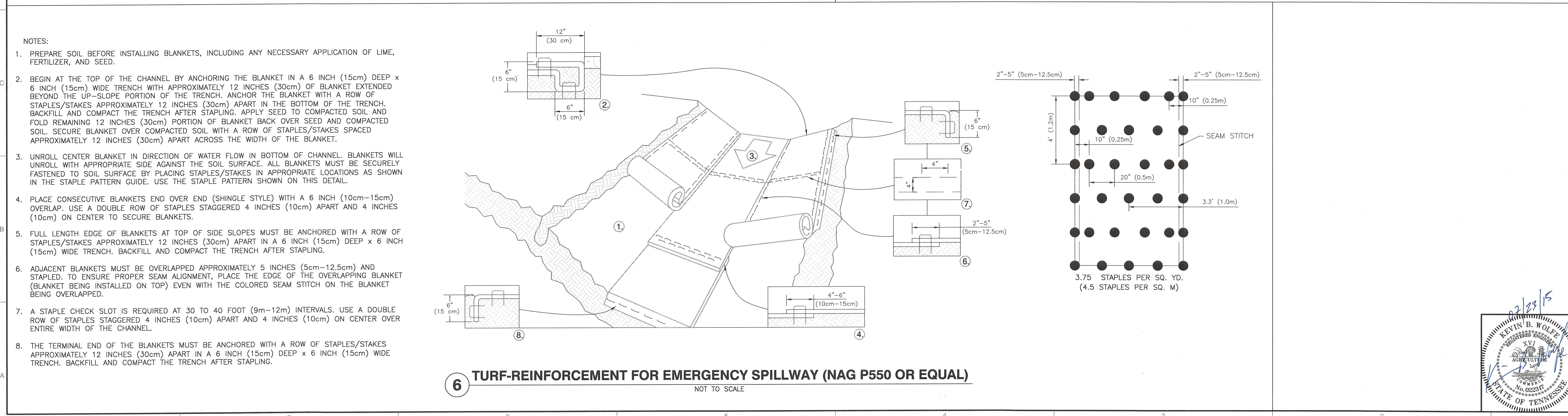
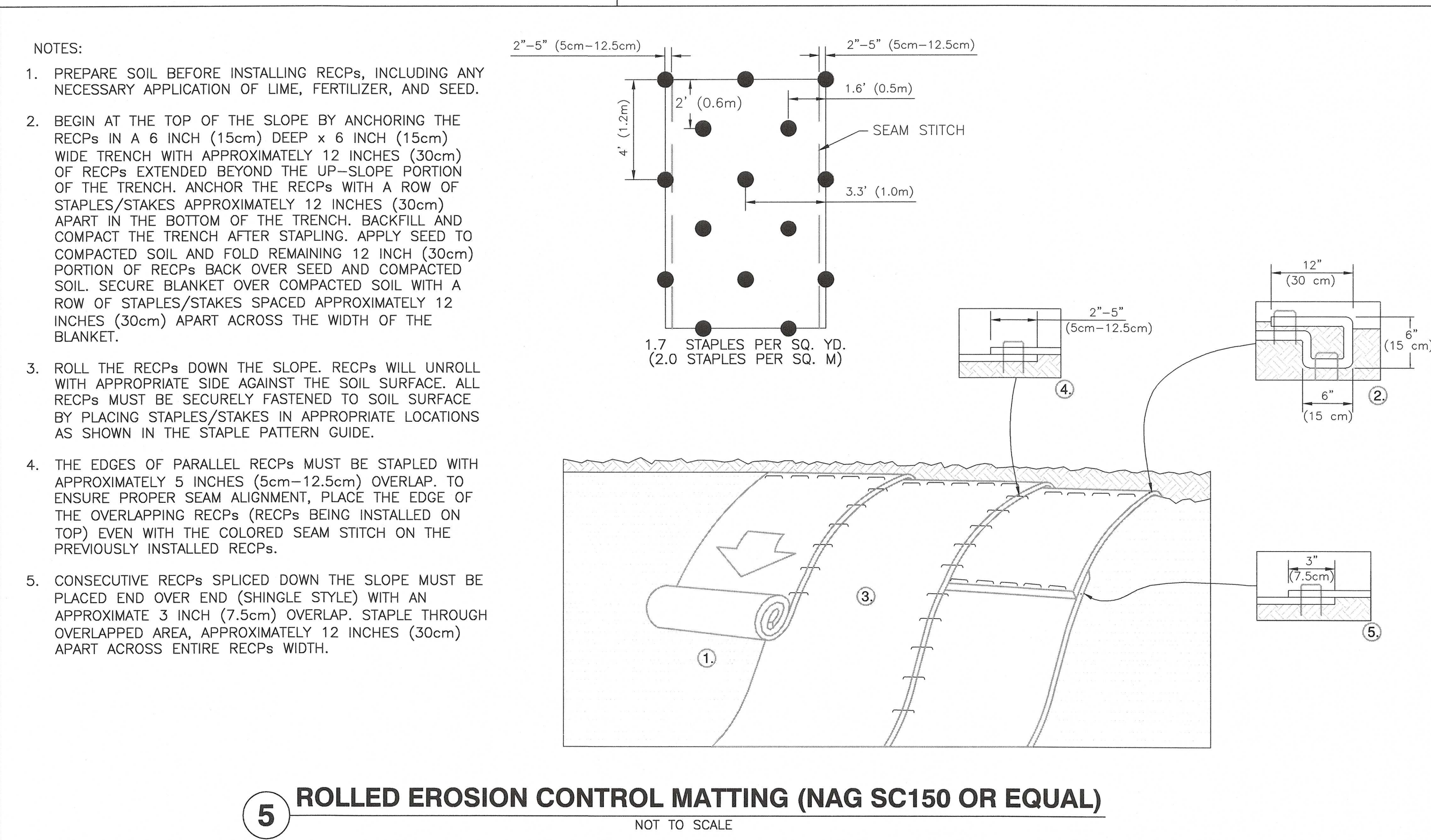
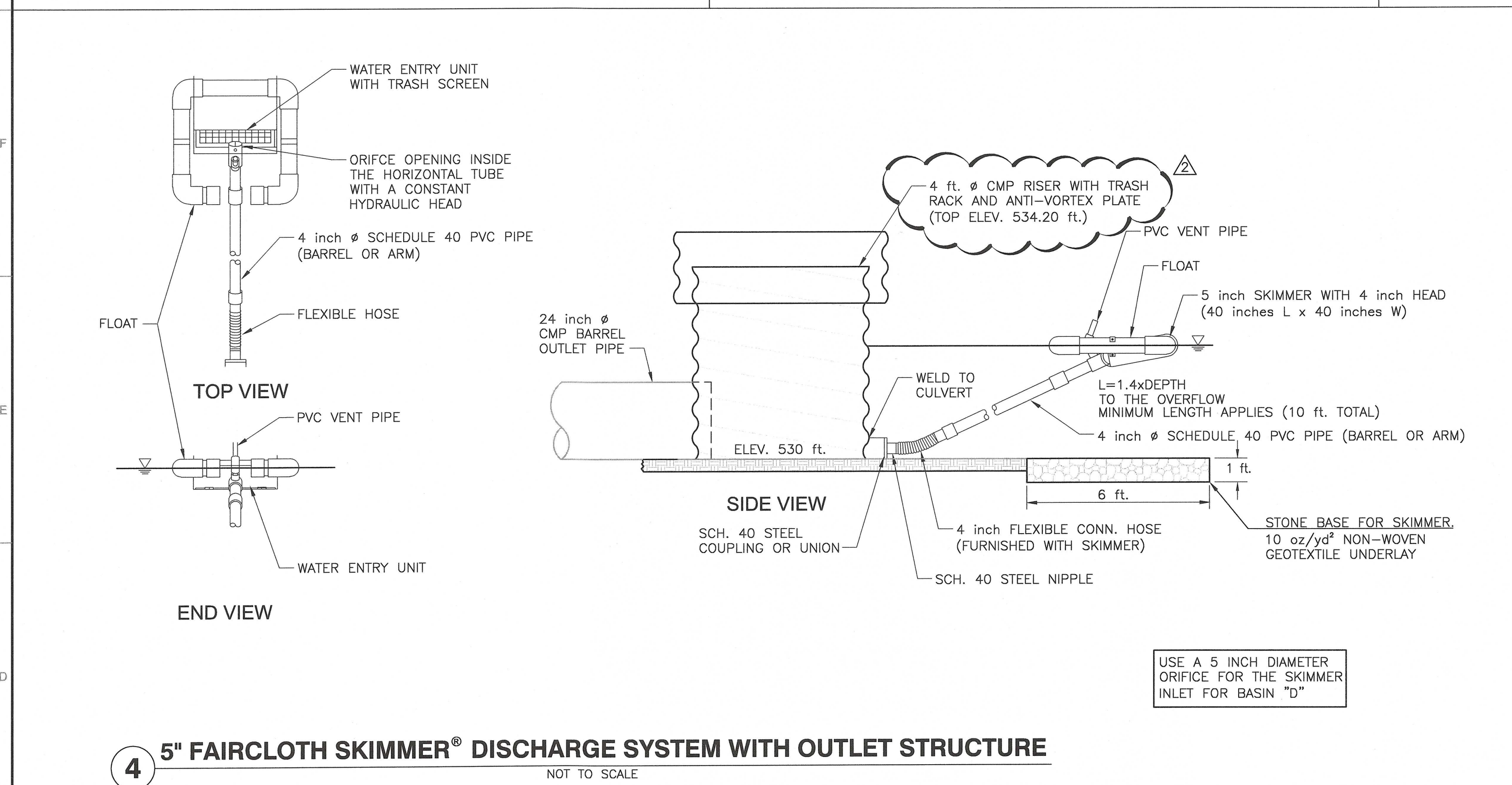
Channel	Minimum Slope (%)	Maximum Slope (%)	Base Width (ft.)	Sideslope (z:1)	Minimum Depth (ft.)	Maximum 25 Yr./24-Hr Flow Depth (ft.)		Velocity (fps)	Max. Shear (psf)	25 Yr./24-Hr Designed Capacity (cfs)		Manning's n	Rock Check Dams
											Lining		
A1	4	7.1	5	2	2	0.59	*11.3	2.2	33.2	Vegetated w/NAG C350	0.02	Required	
A2	3	7.5	5	2	2	0.64	*11.1	2.2	31.3	Vegetated w/NAG C350	0.02	Required	
B1	1.5	1.5	3	2	2	0.88	6.5	0.8	27.4	Vegetated w/NAG C350	0.02	Recommended	
B2	2.2	2.3	3	2	2	0.57	6.3	0.8	14.7	Vegetated w/NAG C350	0.02	Recommended	
C1	2	4	5	2	2	0.38	*11.0	2	58	Vegetated w/NAG C350	0.02	Required	
C2	2	4	5	2	2	0.9	*10.5	1.9	50.5	Vegetated w/NAG C350	0.02	Required	
D1	7.8	8	4	2	2	0.29	*8.2	1.5	30.75	Vegetated w/NAG C350	0.02	Required	

*Check Dams Required to Dissipate Velocities, Especially During Unvegetated Stage of Channel

Note: Available freeboard ranges from 0.4 ft. to 1.5 ft. for all ditches if vegetative growth moves Manning's n as high as 0.05

CHANNEL TABLE

NOT TO SCALE



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**HARBERT TRACT
CLASS II LANDFILL
PERMIT DRAWINGS**

EROSION AND SEDIMENTATION CONTROL DETAILS

18 ECT

SECTION THROUGH BERM AND OUTLET

DETAIL 1
NOT TO SCALE EC1



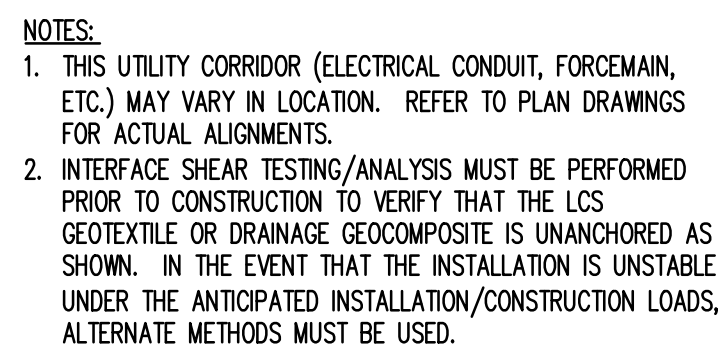
NOTE:
1. THE ON-SITE CHERT PIT MATERIALS WILL BE USED FOR ROAD BASE.

DETAIL
NOT TO SCALE



DETAIL 3
NOT TO SCALE EC1

*CHECK DAMS REQUIRED TO DISSIPATE VELOCITIES, ESPECIALLY DURING UNVEGETATED STAGE OF CHANNEL



DETAIL 4
NOT TO SCALE EC1

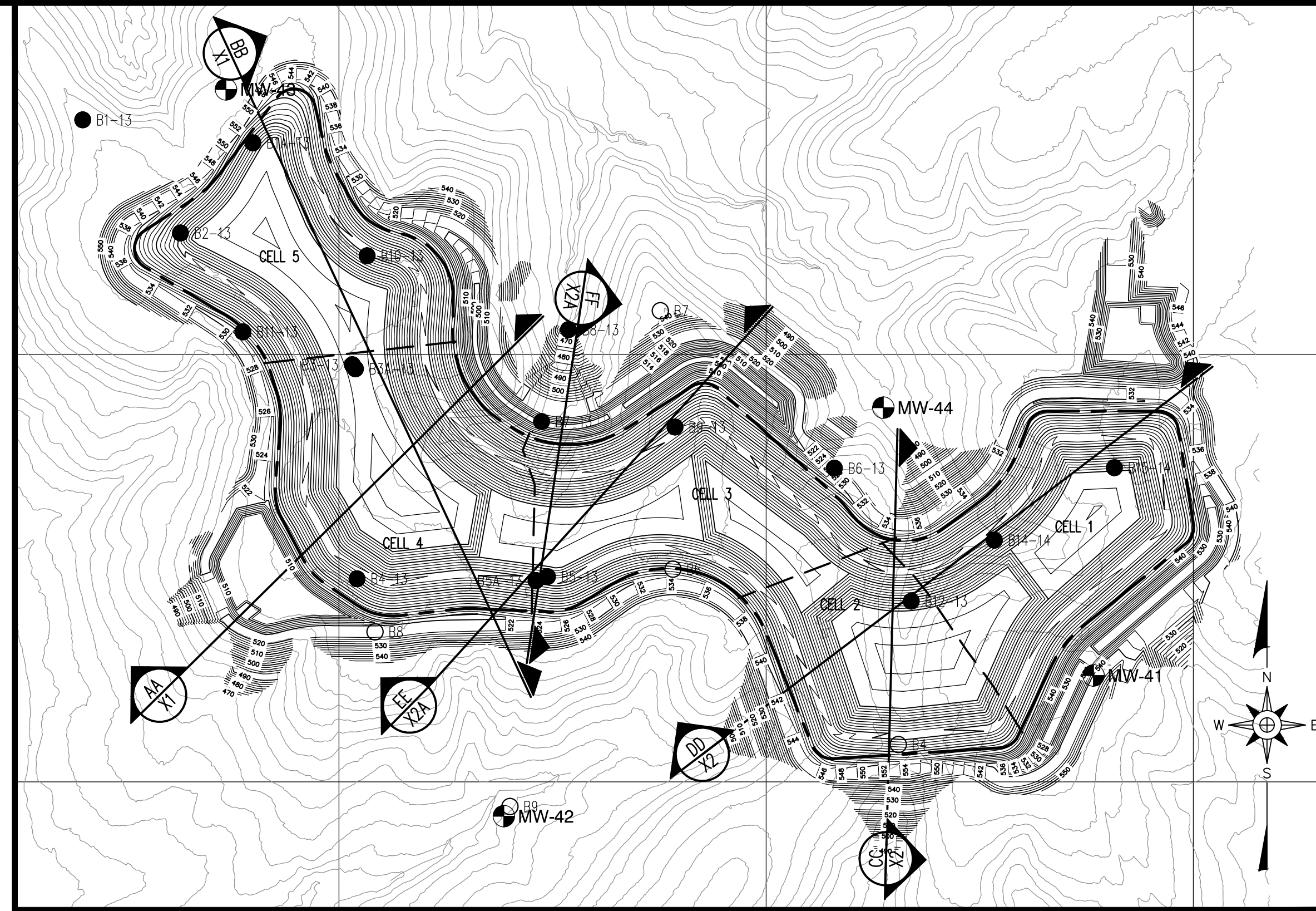
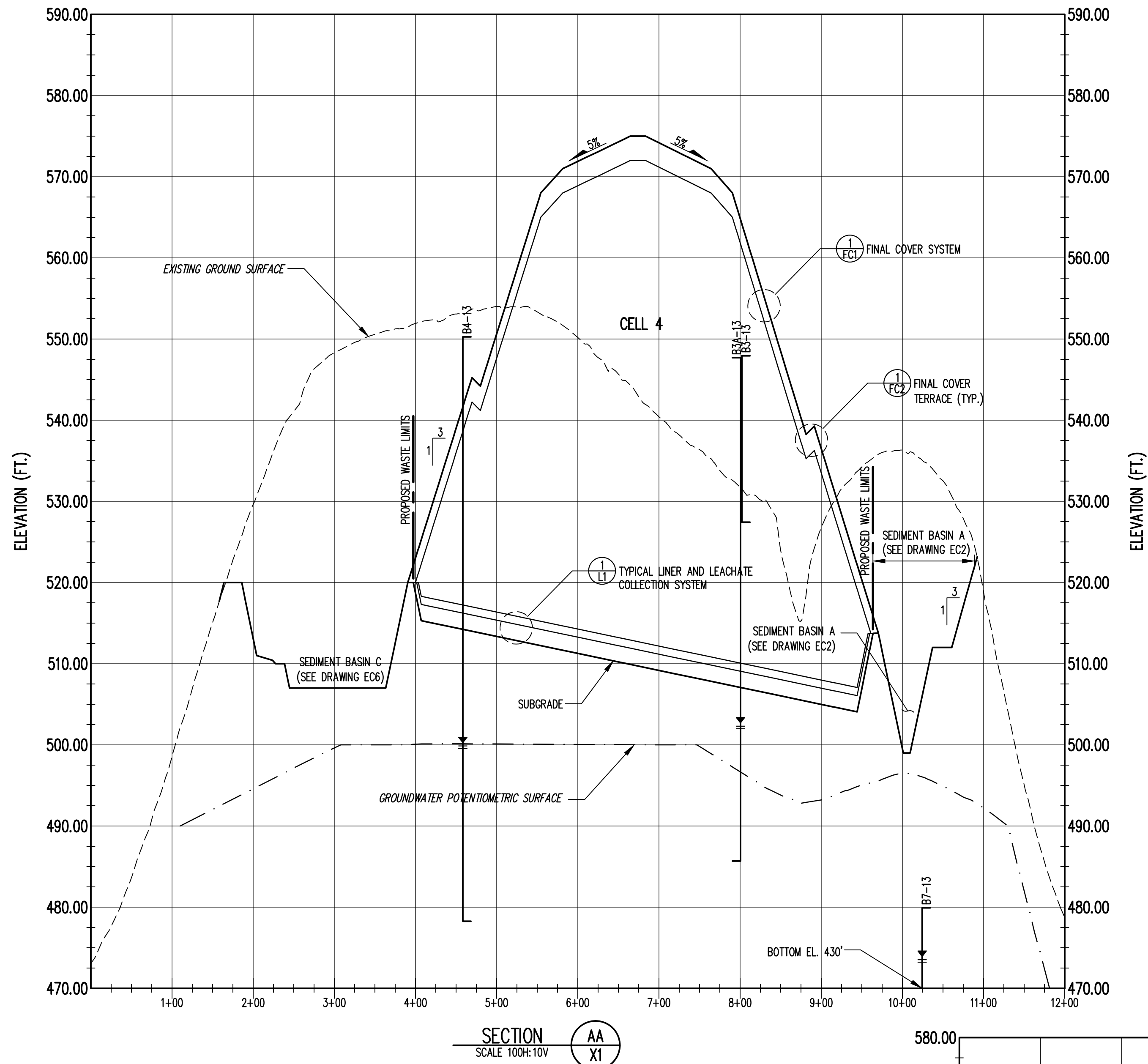
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PERMIT ISSUE
NOT FOR CONSTRUCTION

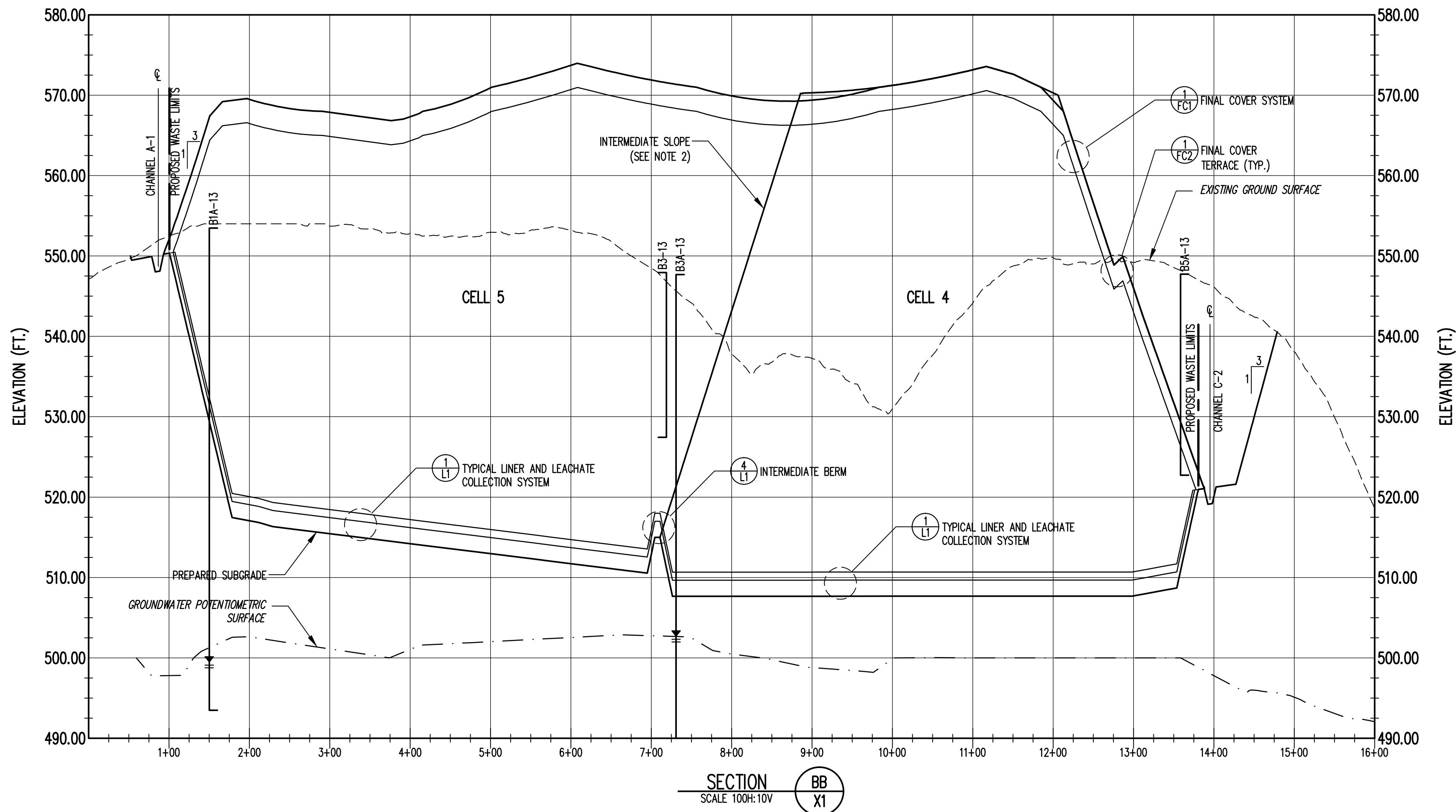
- LEGEND
- EXISTING GROUND SURFACE (REFERENCE 1)
 - PROPOSED GRADING SURFACE
 - GROUNDWATER POTENTIOMETRIC SURFACE (SEE REFERENCE 3)
 - GROUNDWATER LEVEL IN BOREHOLE DURING DRILLING

- REFERENCES
- EXISTING TOPOGRAPHY PROVIDED BY MAGNOLIA RIVER GEOSPATIAL, HUNTSVILLE, ALABAMA. ELEVATIONS BASED ON NAVD83. HORIZONTAL DATUM TENNESSEE STATE PLANE COORDINATE SYSTEM, NAD83. PHOTOGRAPHED FEBRUARY 2013.
 - PROPERTY LINE, ADJACENT PROPERTY LINES, AND PROPERTY OWNER INFORMATION FROM BOUNDARY SURVEY DATED JUNE 18, 2007 BY F&M CONSULTING, INC., SAVANNAH, TN.
 - MONITORING WELL AND BORING LOCATIONS PROVIDED BY F&M CONSULTING, INC., SAVANNAH, TN.

- NOTES
- BORING INFORMATION IS PROJECTED NORMAL TO THE CROSS-SECTIONS AND THEREFORE MAY NOT REFLECT ACTUAL CONDITIONS ACCURATELY ALONG THE SECTIONS AS DEPICTED.
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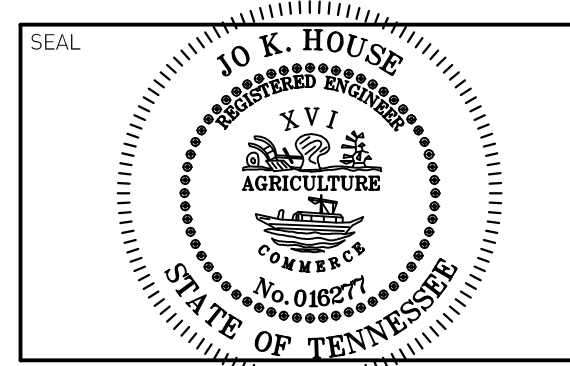
CROSS SECTION LOCATION MAP
NOT TO SCALE



PREPARED FOR:
**PACKAGING CORPORATION
OF AMERICA**
COUNCE, TENNESSEE

PREPARED BY:
**SMITH+
GARDNER**
ENGINEERS
14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

PREPARED BY:
HOUSE ENGINEERING, LLC
7308 River Park Drive, Nashville, TN 37221
Phone: (615) 330-0771 - Fax: (615) 891-2821



REV.	DATE	DESCRIPTION
1	NOV 2014	RESPONSE TO TDEC
		COMPLETENESS REVIEW
2	APRIL 2015	RESPONSE TO TDEC
		NDD 2/25/15
3	JULY 2015	RESPONSE TO TDEC
		COMMENTS MAY 21, 2015

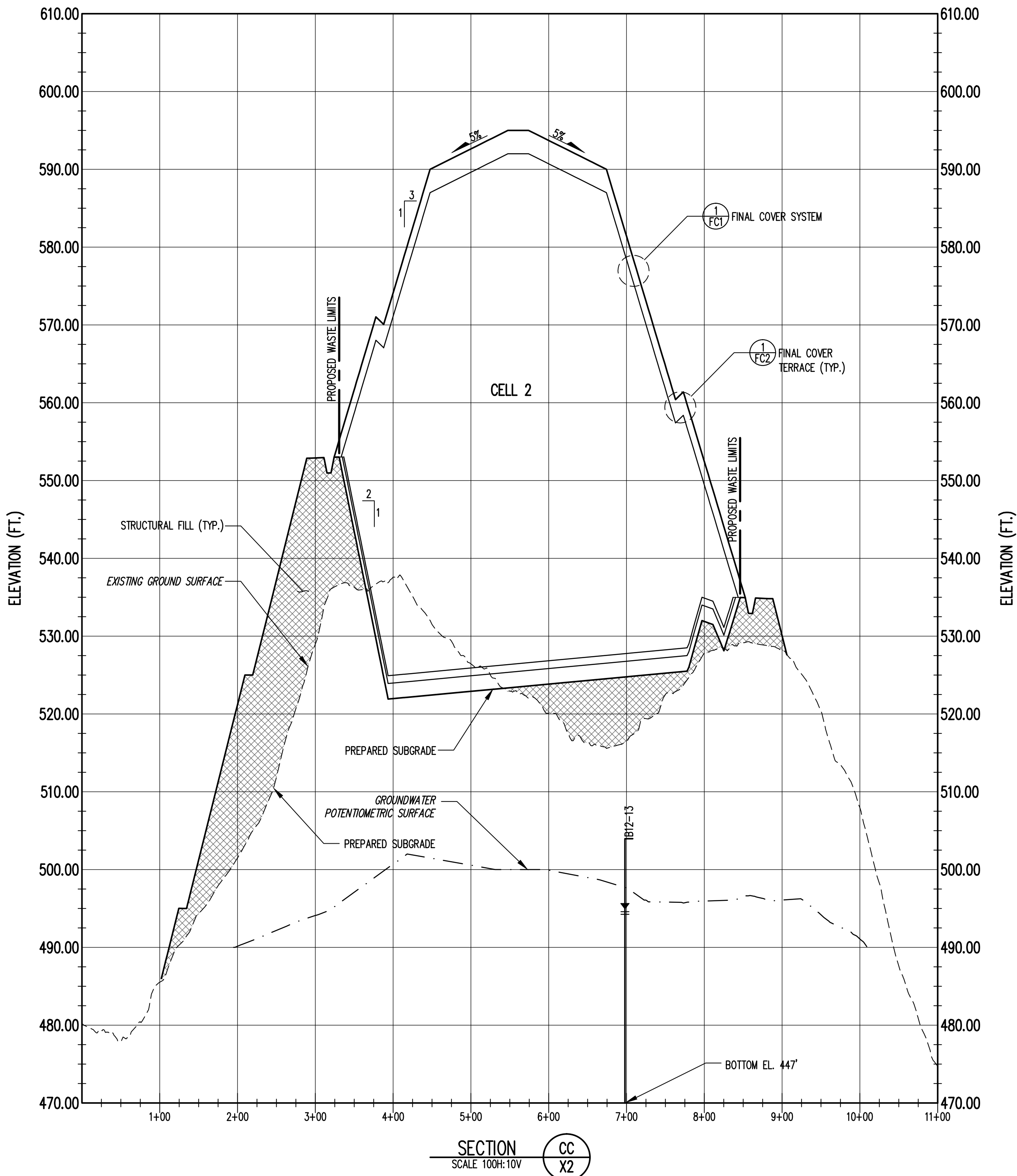
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PROJECT TITLE:
**HARBERT TRACT
CLASS II LANDFILL
PERMIT DRAWINGS**

DRAWING TITLE:
**CROSS SECTIONS
(SHEET 1 OF 3)**

DESIGNED: J.K.H.	PROJECT NO: JHPCA 13-1
DRAWN: T.R.S.	SCALE: AS SHOWN
APPROVED:	DATE: APRIL 2015
FILENAME: JHPCA-D0141C	
SHEET NUMBER: 19	DRAWING NUMBER: X1

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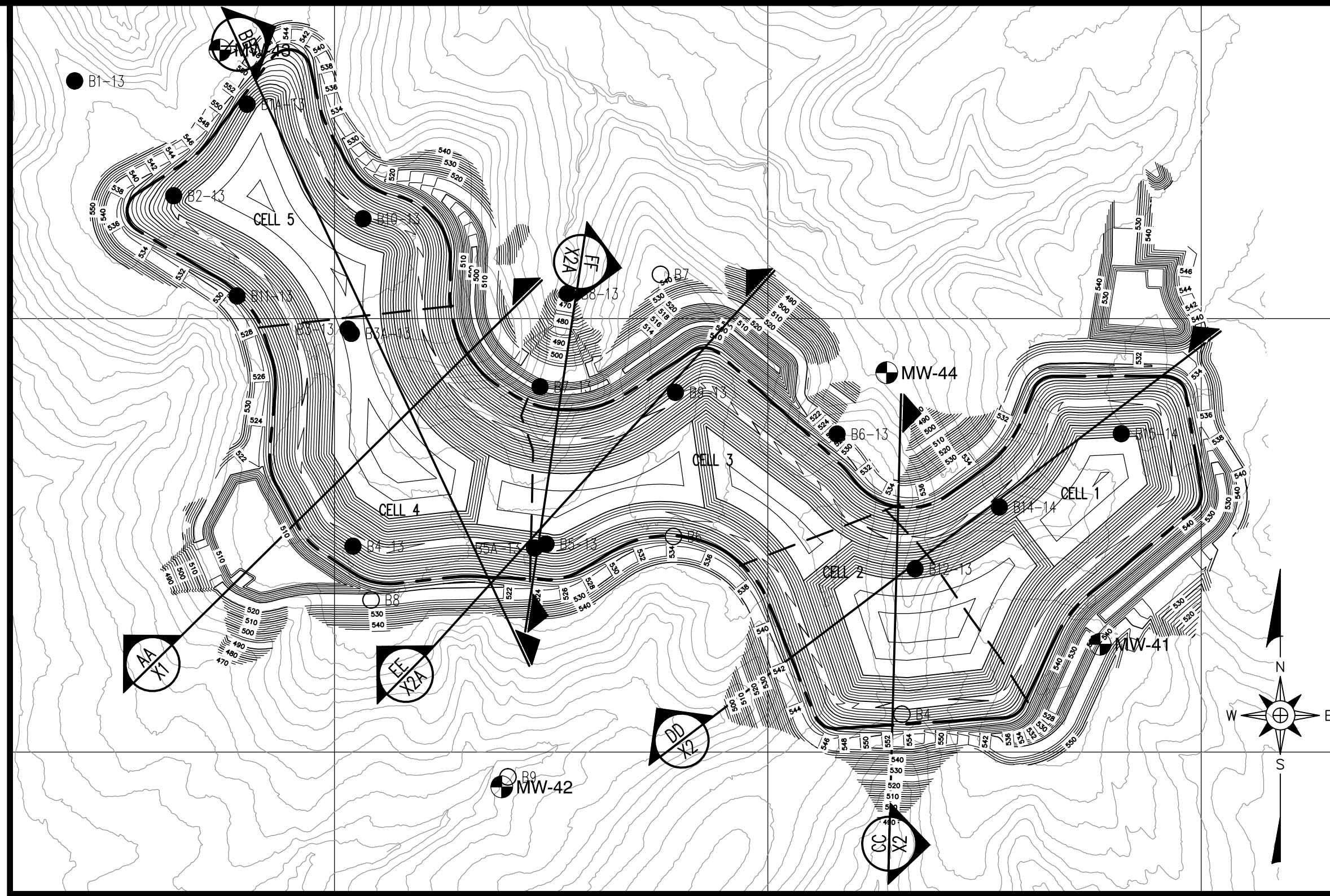
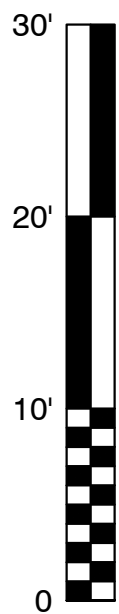


PERMIT ISSUE
NOT FOR CONSTRUCTION

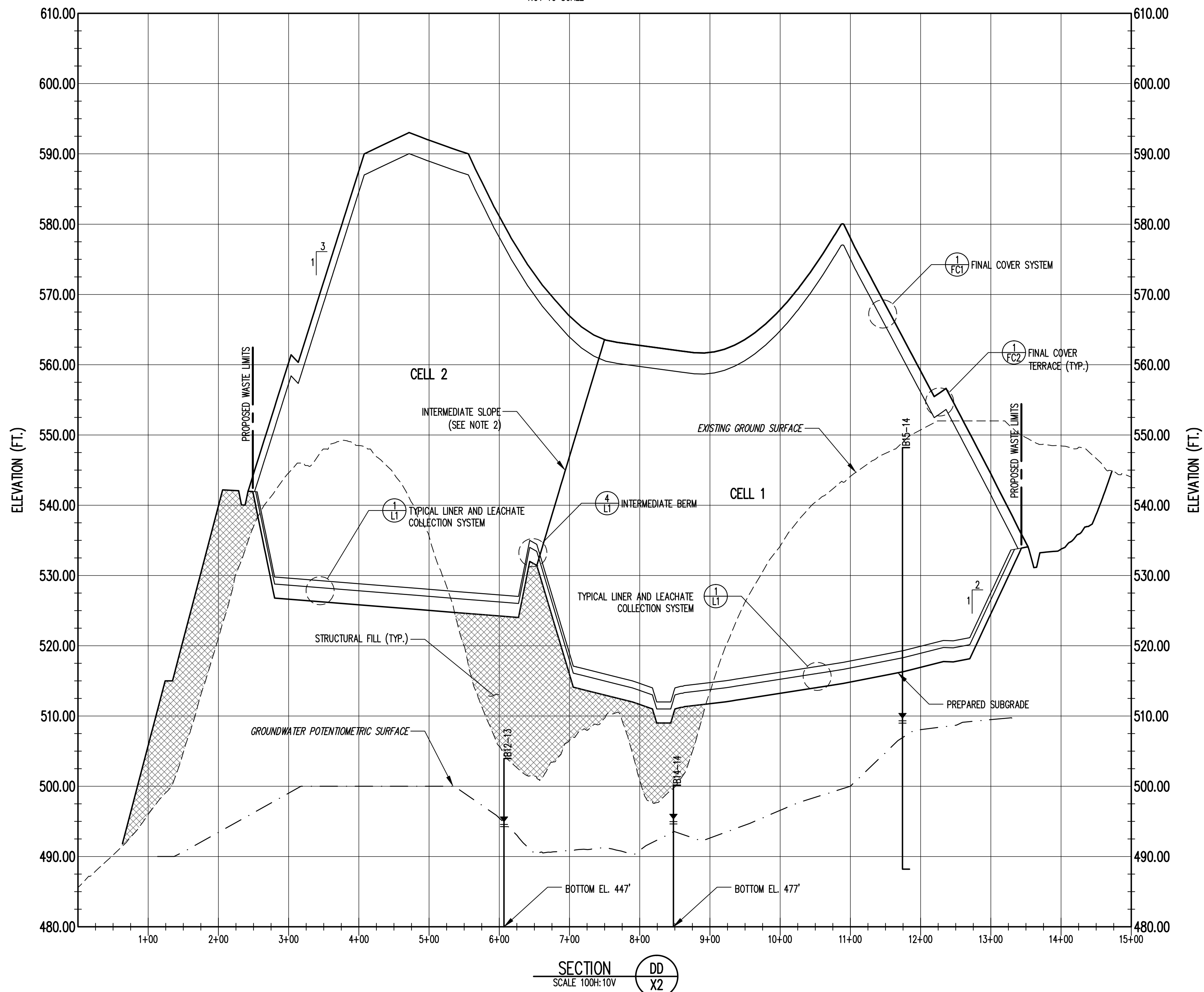
- LEGEND**
- EXISTING GROUND SURFACE (REFERENCE 1)
 - PROPOSED GRADING SURFACE
 - - - GROUNDWATER POTENTIOMETRIC SURFACE (SEE REFERENCE 3)
 - ▽ GROUNDWATER LEVEL IN BOREHOLE DURING DRILLING

- REFERENCES**
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CROSS SECTION LOCATION MAP
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SECTION DD
SCALE 100H:10V X2

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COUNCE, TENNESSEE

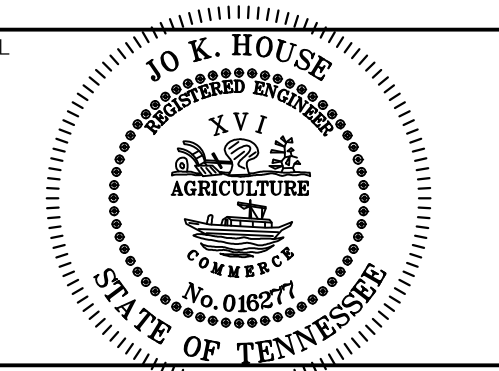
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**SMITH+
GARDNER**
ENGINEERS
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PREPARED BY:

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7308 River Park Drive, Nashville, TN 37221
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REV.	DATE	DESCRIPTION
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		COMPLETENESS REVIEW
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		NDD 2/25/15
3	JULY 2015	RESPONSE TO TDEC
		COMMENTS MAY 21, 2015

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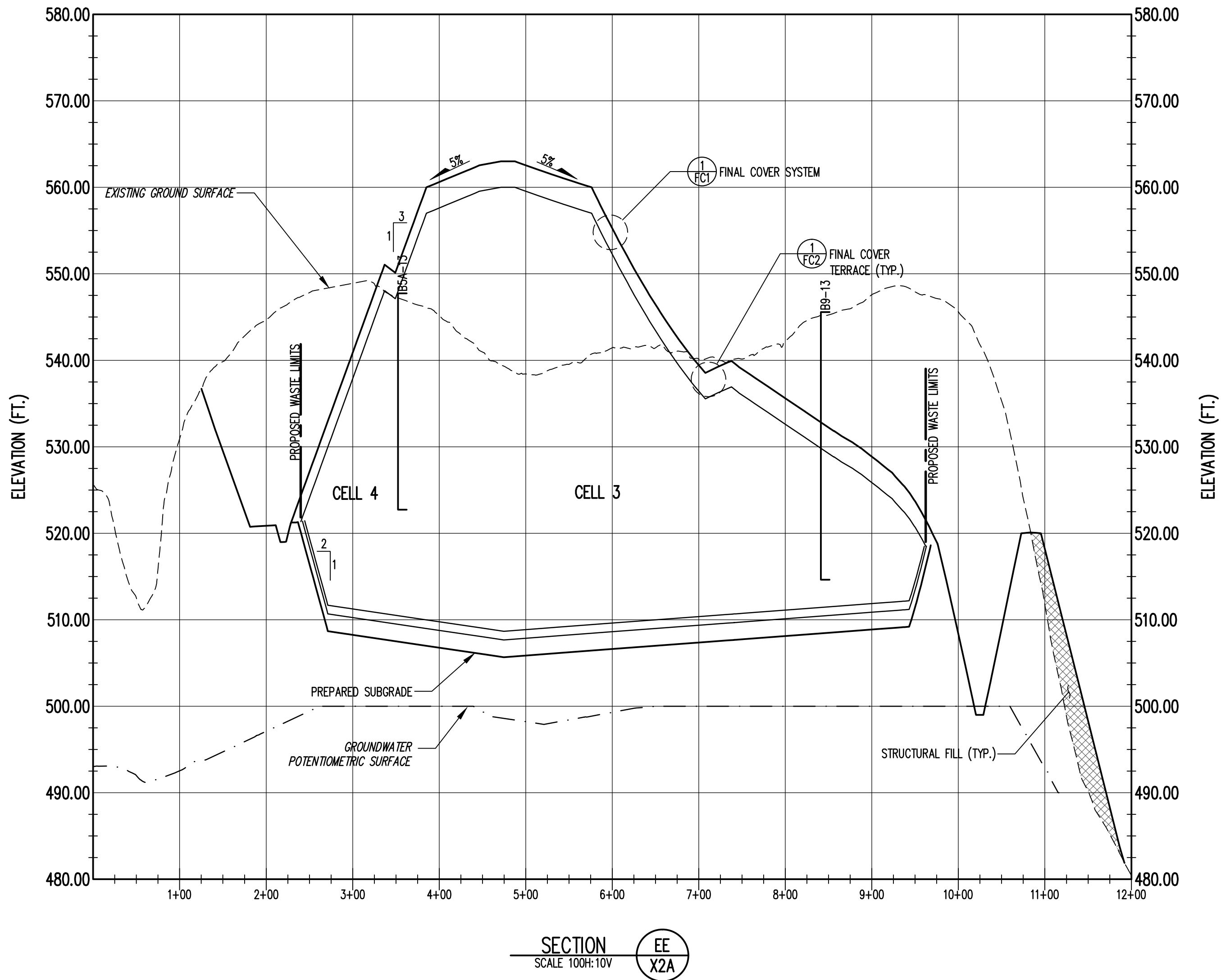
**HARBERT TRACT
CLASS II LANDFILL
PERMIT DRAWINGS**

DRAWING TITLE:

**CROSS SECTIONS
(SHEET 2 OF 3)**

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DRAWN: T.R.S.	SCALE: AS SHOWN
APPROVED:	DATE: APRIL 2015
FILENAME: JHPCA-D0141C	
SHEET NUMBER: 20	DRAWING NUMBER: X2

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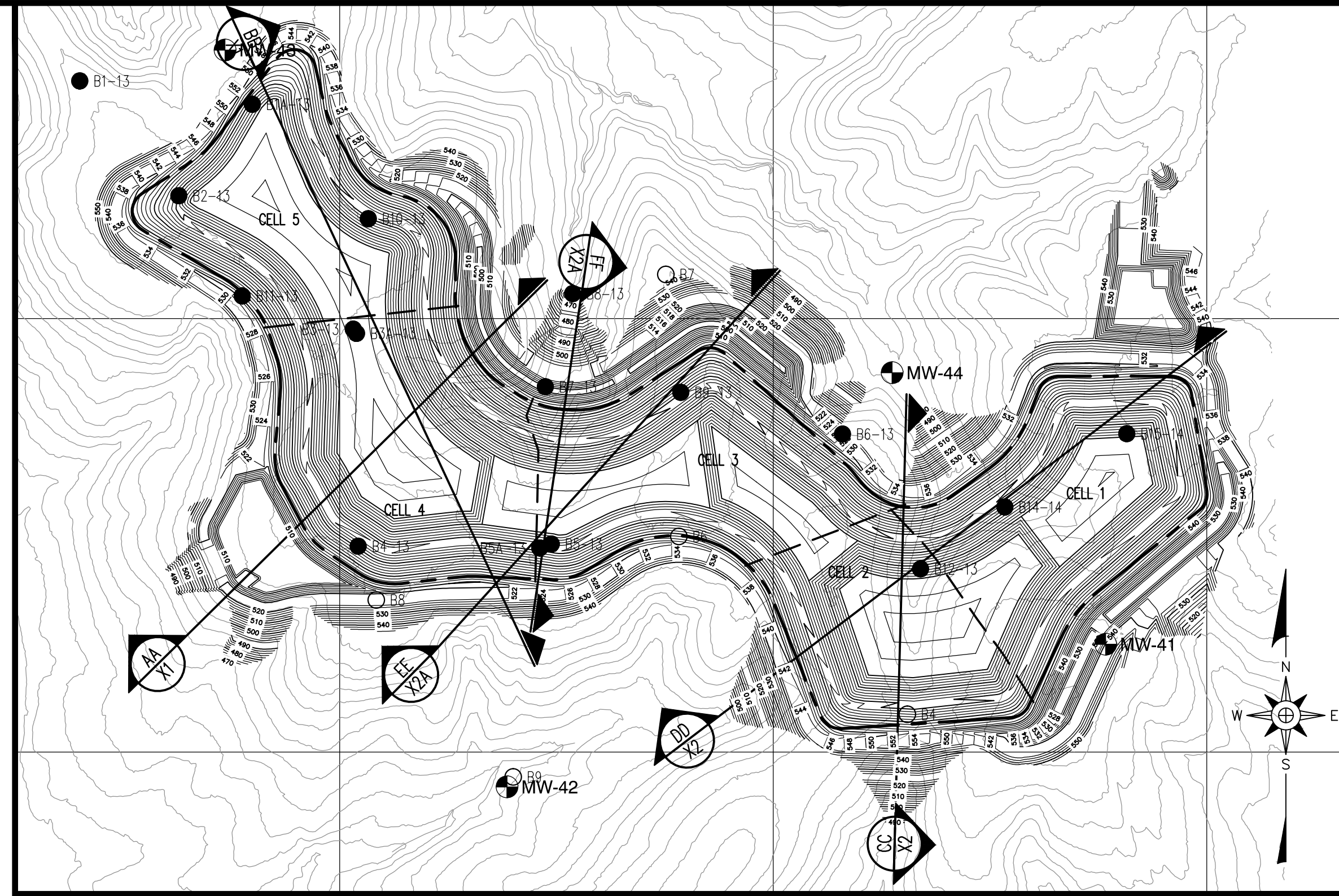
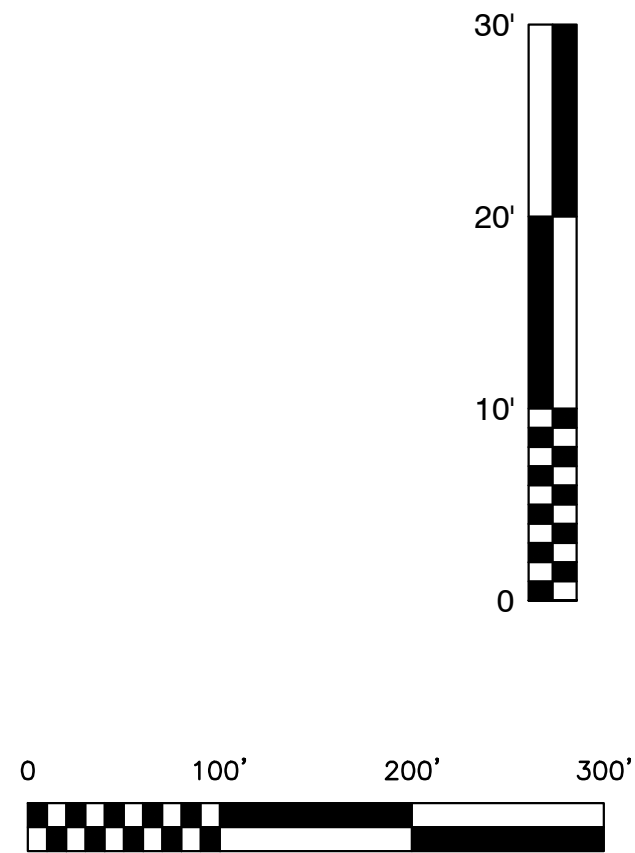


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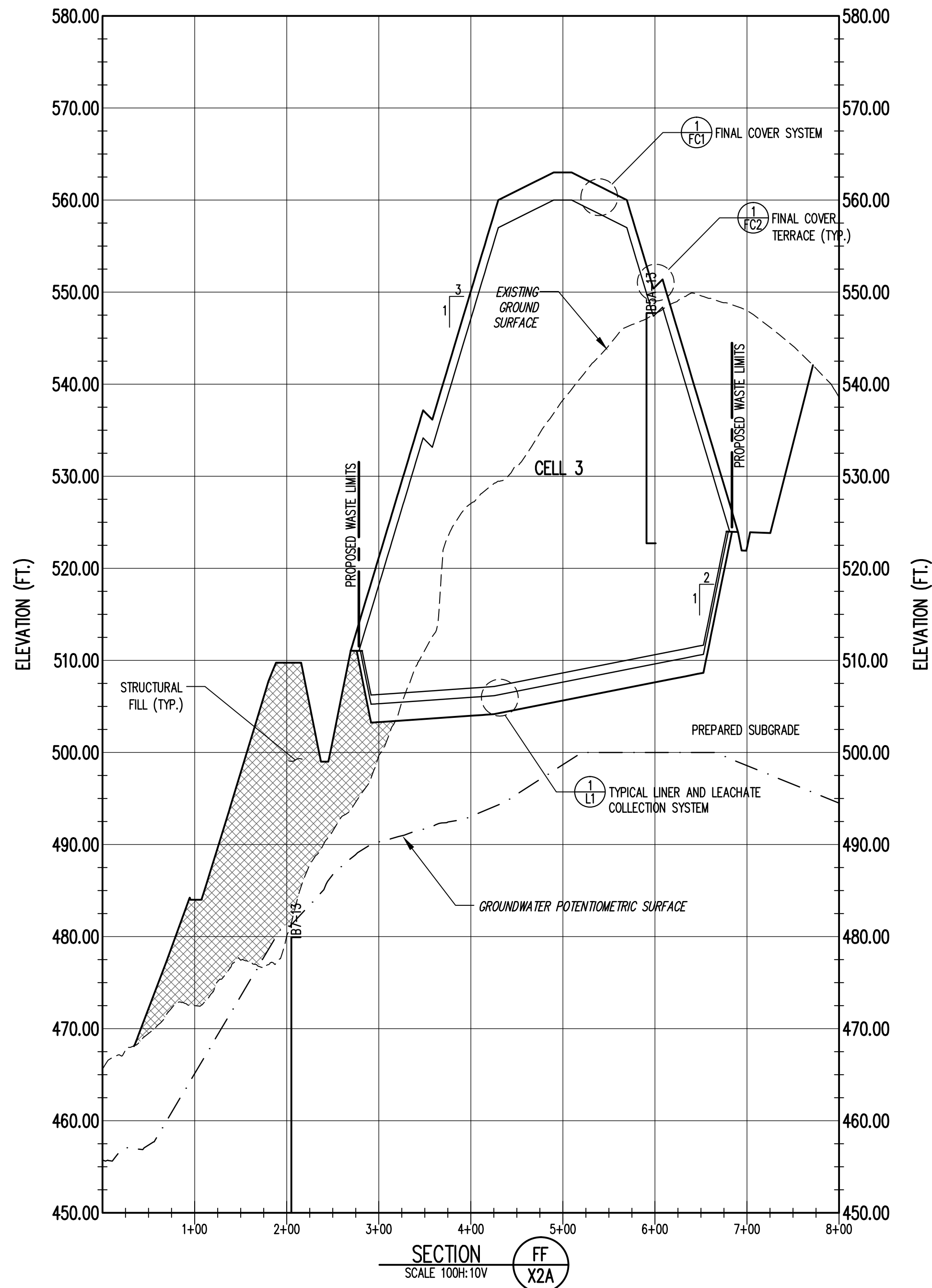
- LEGEND**
- EXISTING GROUND SURFACE (REFERENCE 1)
 - PROPOSED GRADING SURFACE
 - - - - - GROUNDWATER POTENTIOMETRIC SURFACE (SEE REFERENCE 3)
 - ≡ GROUNDWATER LEVEL IN BOREHOLE DURING DRILLING

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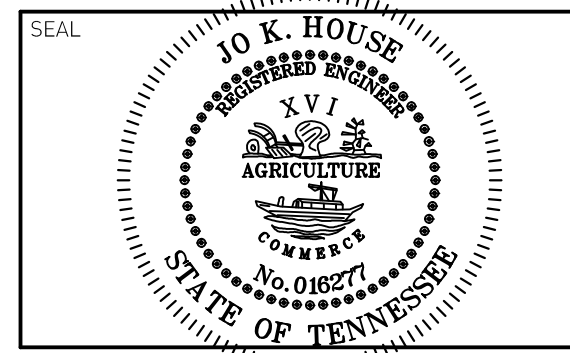
CROSS SECTION LOCATION MAP
NOT TO SCALE



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OF AMERICA**
COUNCE, TENNESSEE

PREPARED BY:
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14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

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7308 River Park Drive, Nashville, TN 37221
Phone: (615) 330-0771 - Fax: (615) 891-2821



REV.	DATE	DESCRIPTION
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		COMPLETENESS REVIEW
2	APRIL 2015	RESPONSE TO TDEC
		NDD 2/25/15
3	JULY 2015	RESPONSE TO TDEC
		COMMENTS MAY 21, 2015

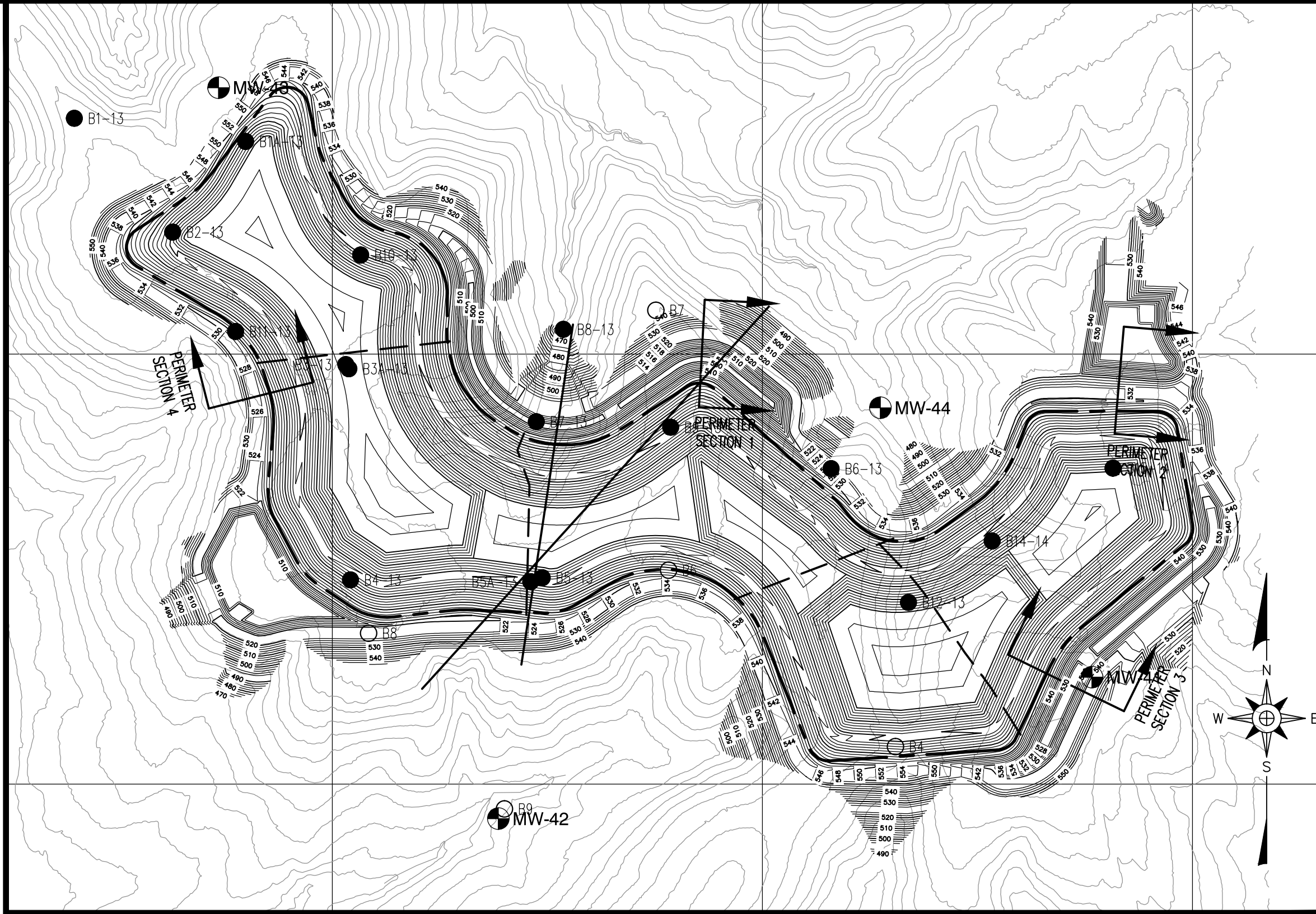
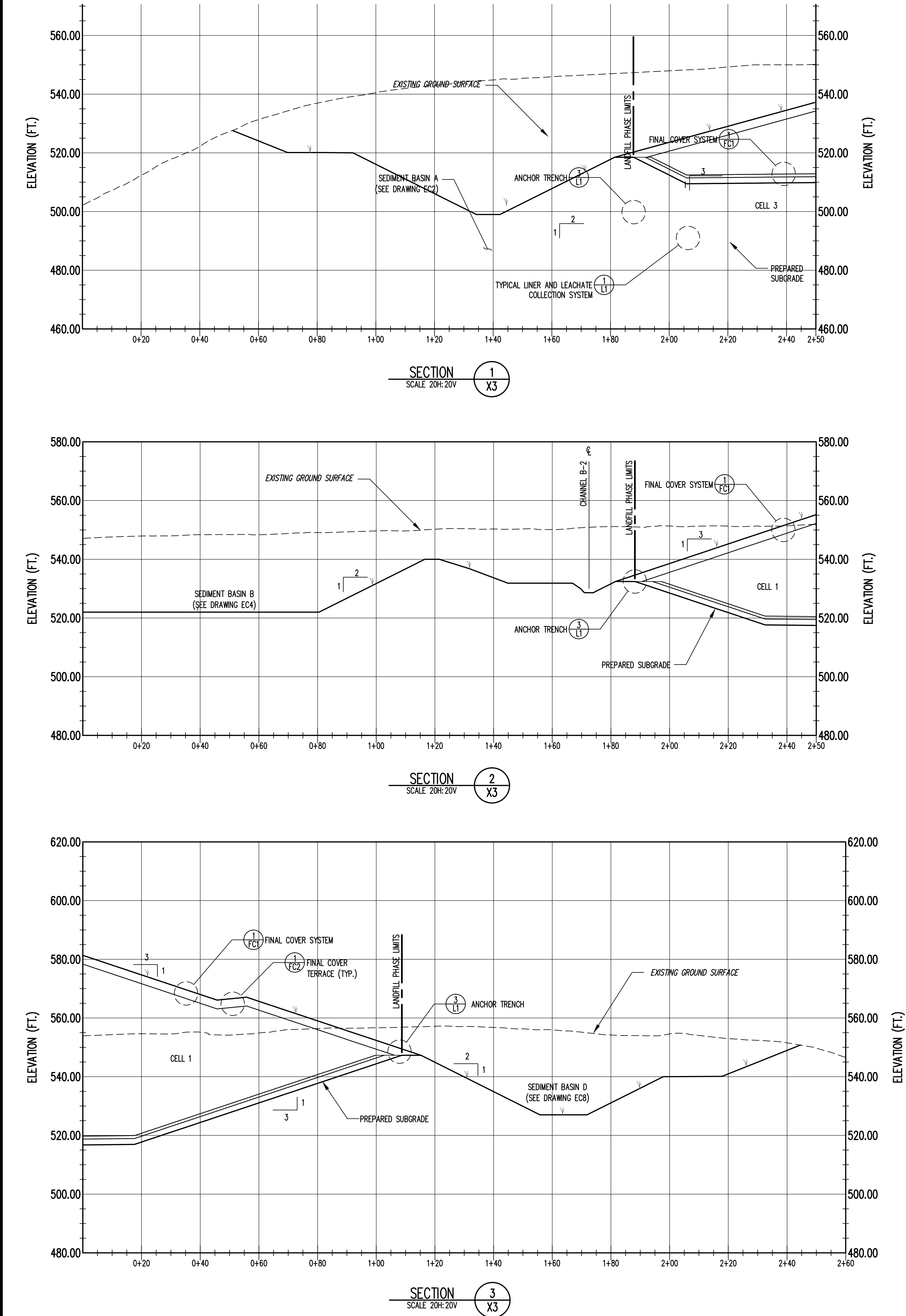
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PROJECT TITLE:
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CLASS II LANDFILL
PERMIT DRAWINGS**

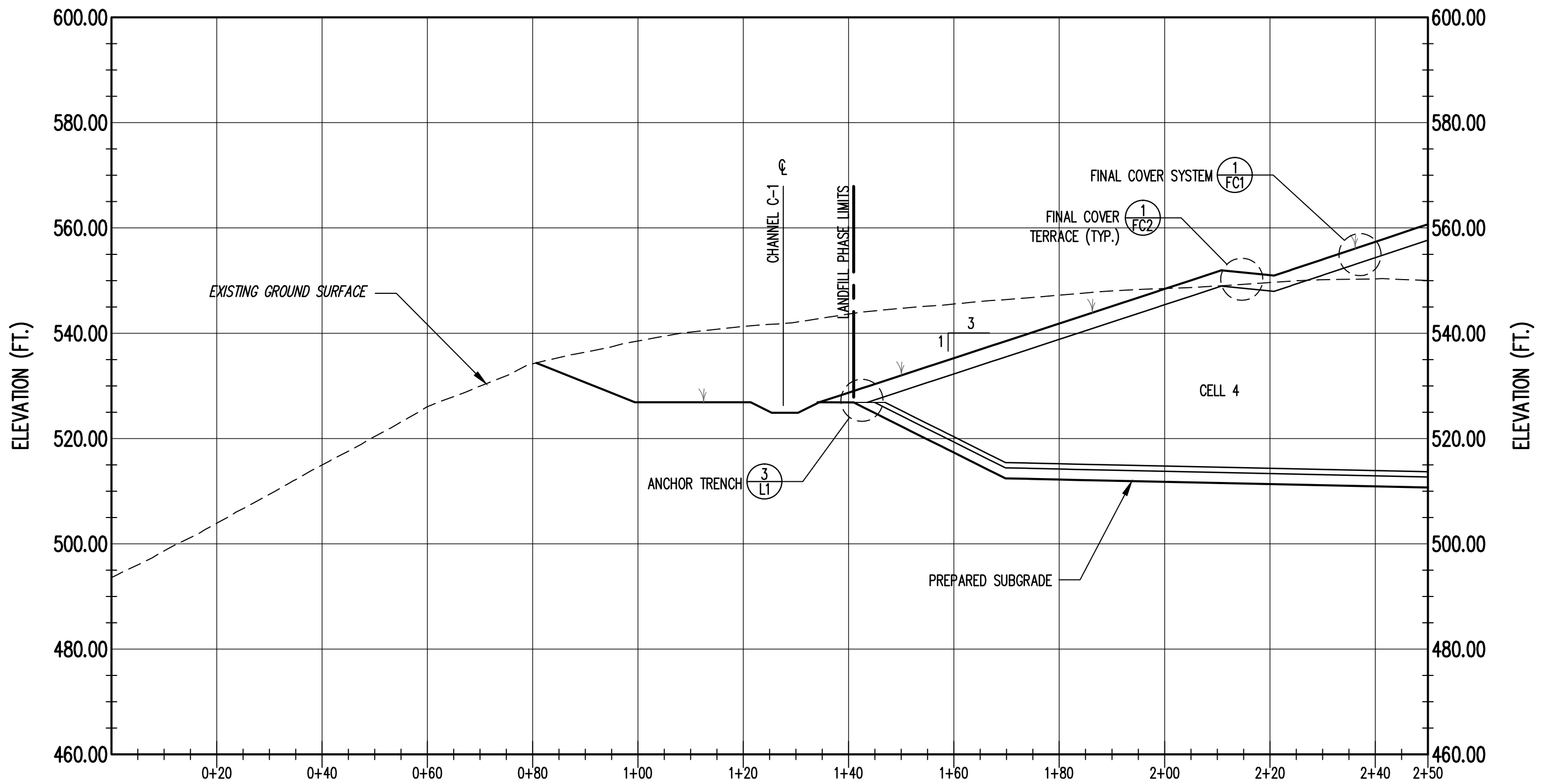
DRAWING TITLE:
**CROSS SECTIONS
(SHEET 3 OF 3)**

DESIGNED: J.K.H.	PROJECT NO: JHPCA 13-1
DRAWN: T.R.S.	SCALE: AS SHOWN
APPROVED:	DATE: APRIL 2015
FILENAME: JHPCA-D0141C	
SHEET NUMBER: 20A	DRAWING NUMBER: X2A

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CROSS SECTION LOCATION MAP
NOT TO SCALE



SECTION 4
SCALE 20H:20V
X3

LEGEND

--- EXISTING GROUND SURFACE (REFERENCE 1)

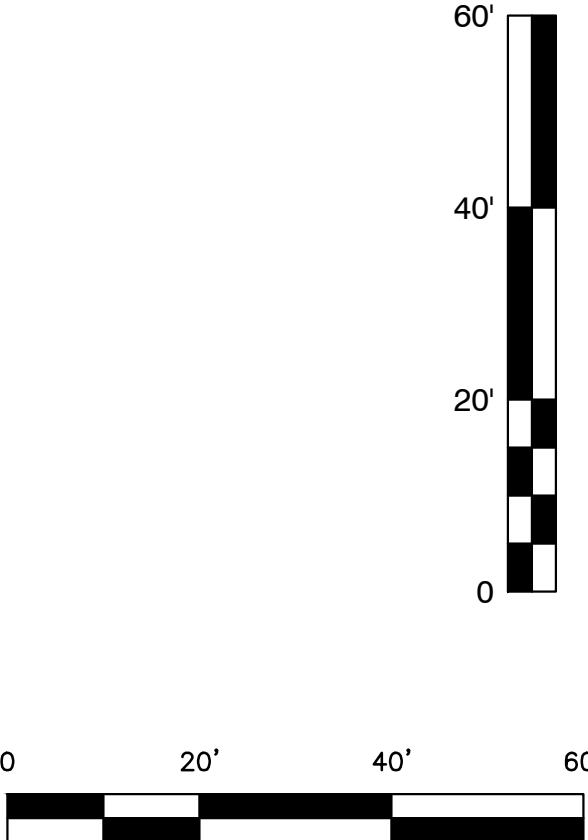
— PROPOSED GRADING SURFACE

REFERENCES

1. EXISTING TOPOGRAPHY PROVIDED BY MAGNOLIA RIVER GEOSPATIAL, HUNTSVILLE, ALABAMA. ELEVATIONS BASED ON NAVD83. HORIZONTAL DATUM TENNESSEE STATE PLANE COORDINATE SYSTEM, NAD83. PHOTOGRAPHED FEBRUARY 2013.

2. PROPERTY LINE, ADJACENT PROPERTY LINES, AND PROPERTY OWNER INFORMATION FROM BOUNDARY SURVEY DATED JUNE 18, 2007 BY F&M CONSULTING, INC., SAVANNAH, TN.

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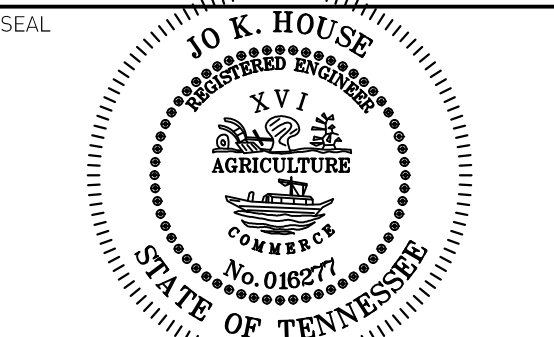
PACKAGING CORPORATION OF AMERICA
COUNCE, TENNESSEE

PREPARED BY:

SMITH+GARDNER ENGINEERS
14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

PREPARED BY:

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7308 River Park Drive, Nashville, TN 37221
Phone: (615) 330-0771 - Fax: (615) 891-2821



REV.	DATE	DESCRIPTION
2	APRIL 2015	RESPONSE TO TDEC
		NOD 2/25/15
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		COMMENTS MAY 21, 2015

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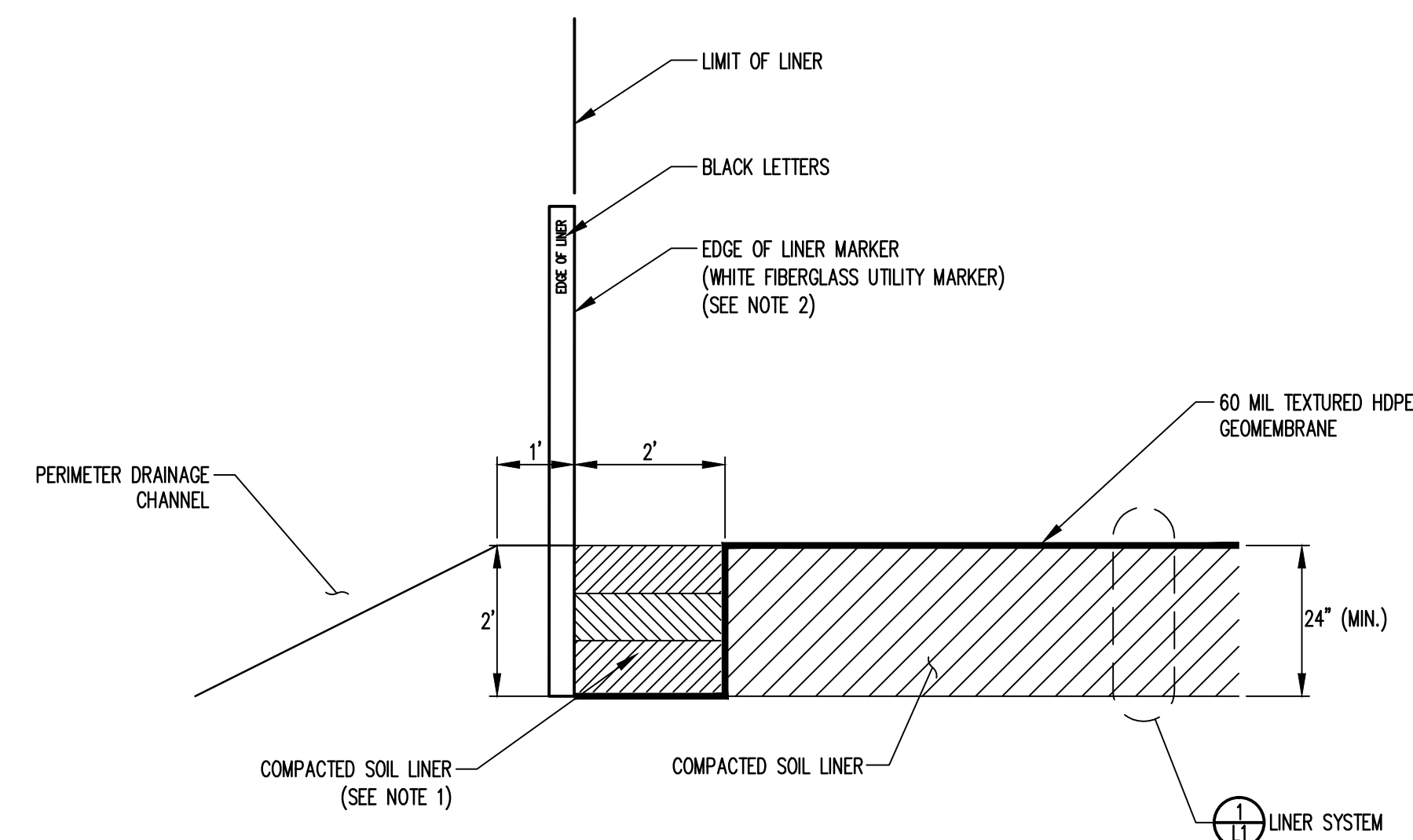
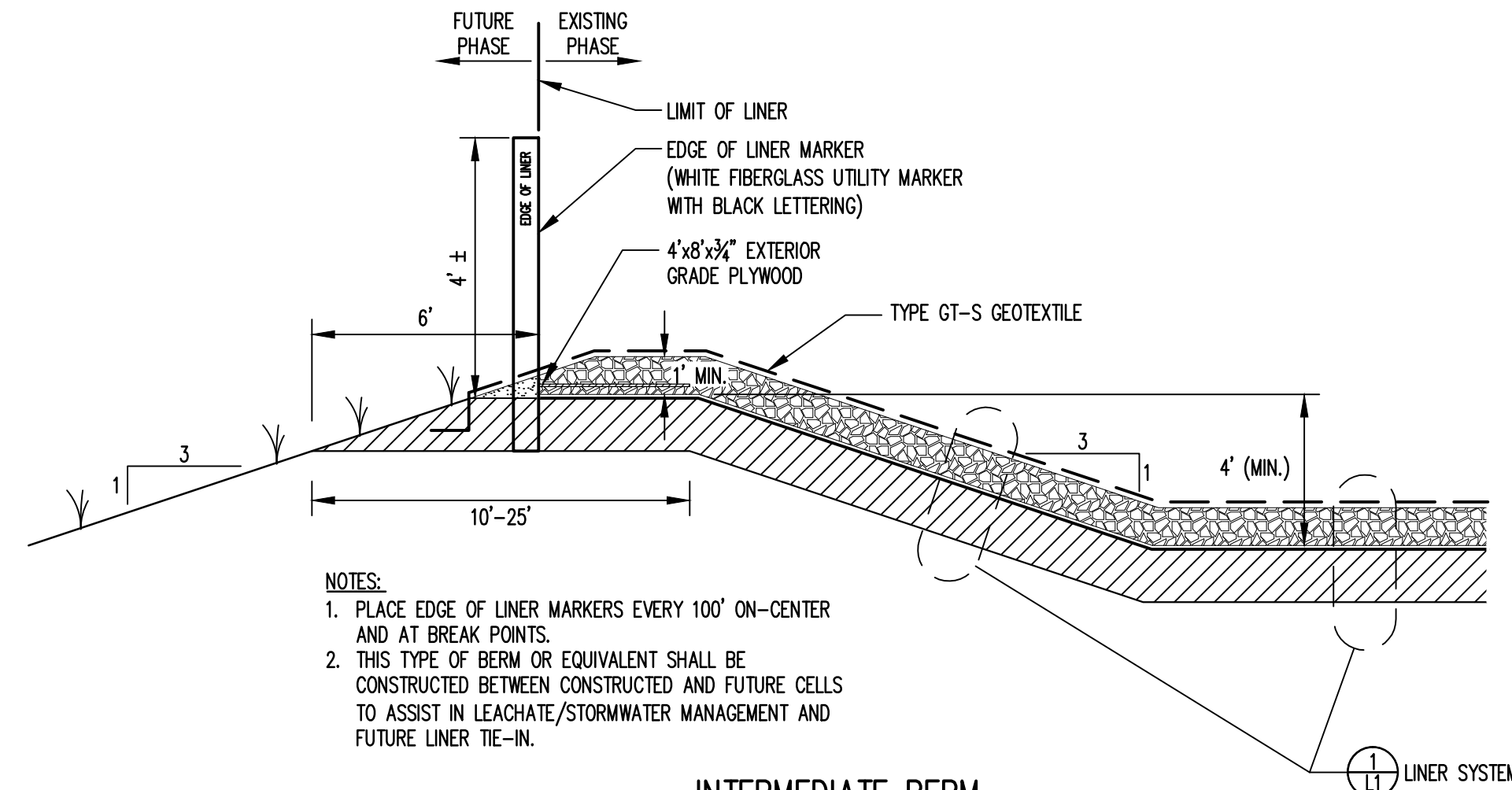
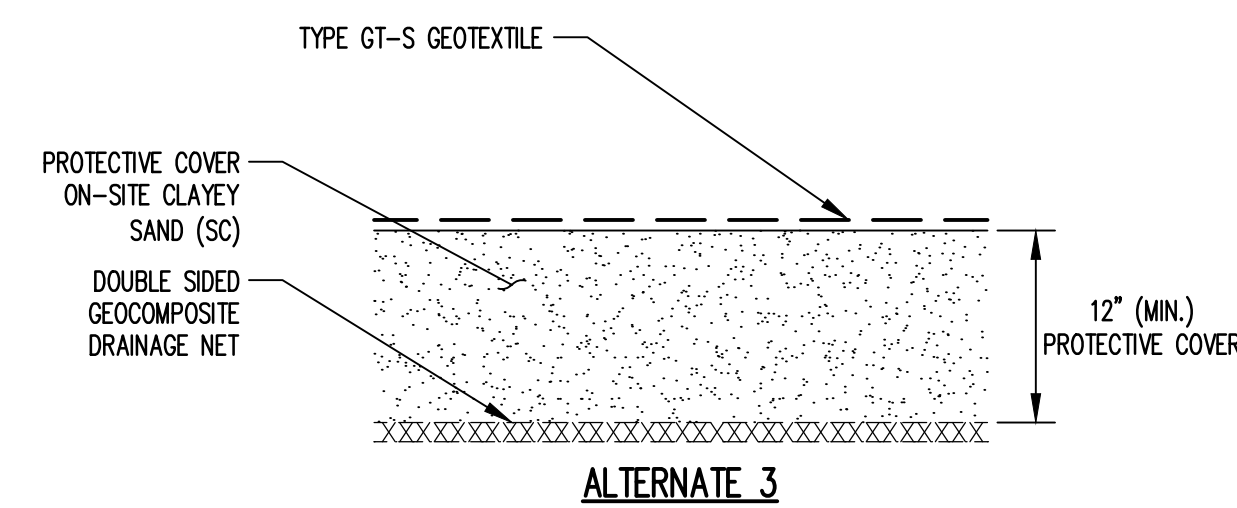
PROJECT TITLE:

HARBERT TRACT CLASS II LANDFILL PERMIT DRAWINGS

DRAWING TITLE:

PERIMETER SECTIONS

DESIGNED:	J.K.H.	PROJECT NO:	JHPCA 13-1
DRAWN:	T.R.S	SCALE:	AS SHOWN
APPROVED:		DATE:	APRIL 2015
FILENAME:	JHPCA-D0141C		
SHEET NUMBER:	21	DRAWING NUMBER:	X3



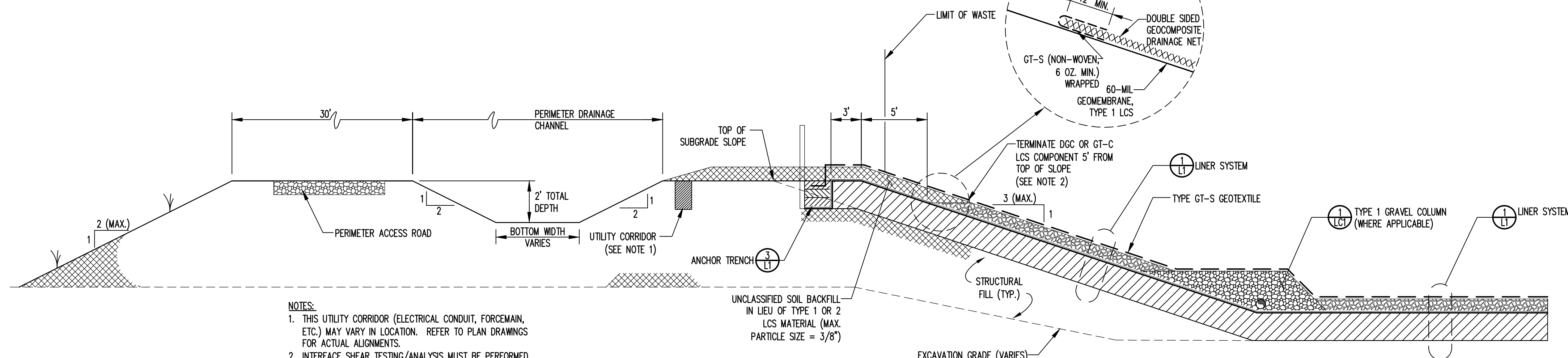
- NOTES:**
1. PLACE EDGE OF LINER MARKERS EVERY 100' ON-CENTER AND AT BREAK POINTS.
 2. THIS TYPE OF BERM OR EQUIVALENT SHALL BE CONSTRUCTED BETWEEN CONSTRUCTED AND FUTURE CELLS TO ASSIST IN LEACHATE/STORMWATER MANAGEMENT AND FUTURE LINER TIE-IN.

- NOTES:
1. BACKFILL ANCHOR TRENCH IN 6"-THICK (COMPACTED THICKNESS) LIFTS.
 2. PLACE EDGE OF LINER MARKERS EVERY 100' ON-CENTER AND AT BREAK POINTS.
 3. SOME LAYERS NOT SHOW FOR CLARITY.

ANCHOR TRENCH

DETAIL 4
NOT TO SCALE L1

DETAIL 3
NOT TO SCALE

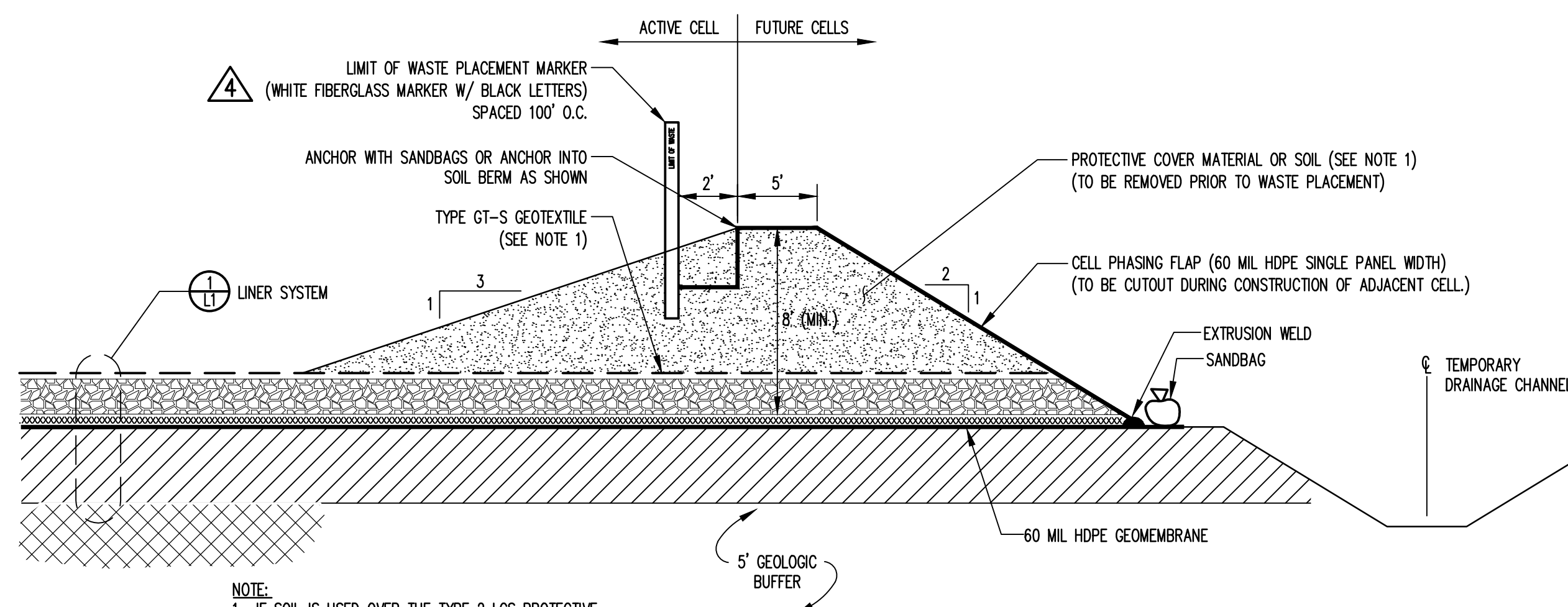


- NOTES:
1. THIS UTILITY CORRIDOR (ELECTRICAL CONDUIT, FORCEMAIN, ETC.) MAY VARY IN LOCATION. REFER TO PLAN DRAWINGS FOR ACTUAL ALIGNMENTS.
 2. INTERFACE SHEAR TESTING/ANALYSIS MUST BE PERFORMED PRIOR TO CONSTRUCTION TO VERIFY THAT THE LCS GEOTEXTILE OR DRAINAGE GEOCOMPOSITE IS UNANCHORED AS SHOWN. IN THE EVENT THAT THE INSTALLATION IS UNSTABLE UNDER THE ANTICIPATED INSTALLATION/CONSTRUCTION LOADS, ALTERNATE METHODS MUST BE USED.

DETAIL

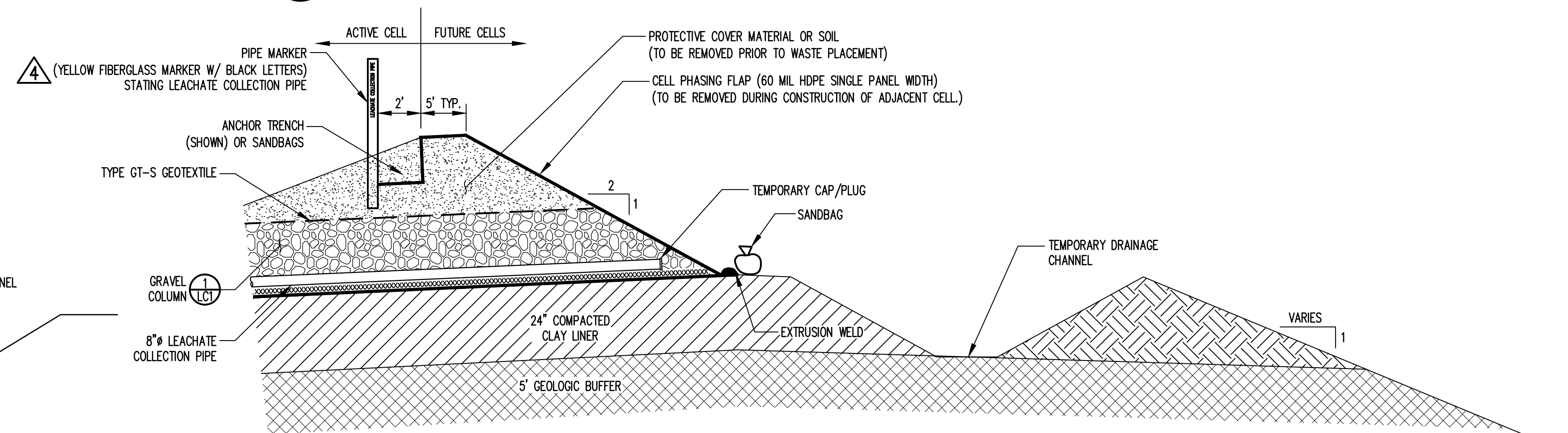
NOT TO SCALE

2
L1



- NOTE:**
1. IF SOIL IS USED OVER THE TYPE 2 LCS PROTECTIVE COVER, THEN INSTALL A TYPE GT-S GEOTEXTILE AS SHOWN.

DETAIL 5
NOT TO SCALE L1



DETAIL

NOT TO SCALE

6
L1

**PACKAGING CORPORATION
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COUNCE, TENNESSEE**

PREPARED BY:

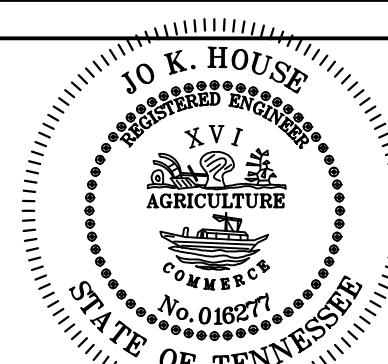
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PREPARED BY:



SEA

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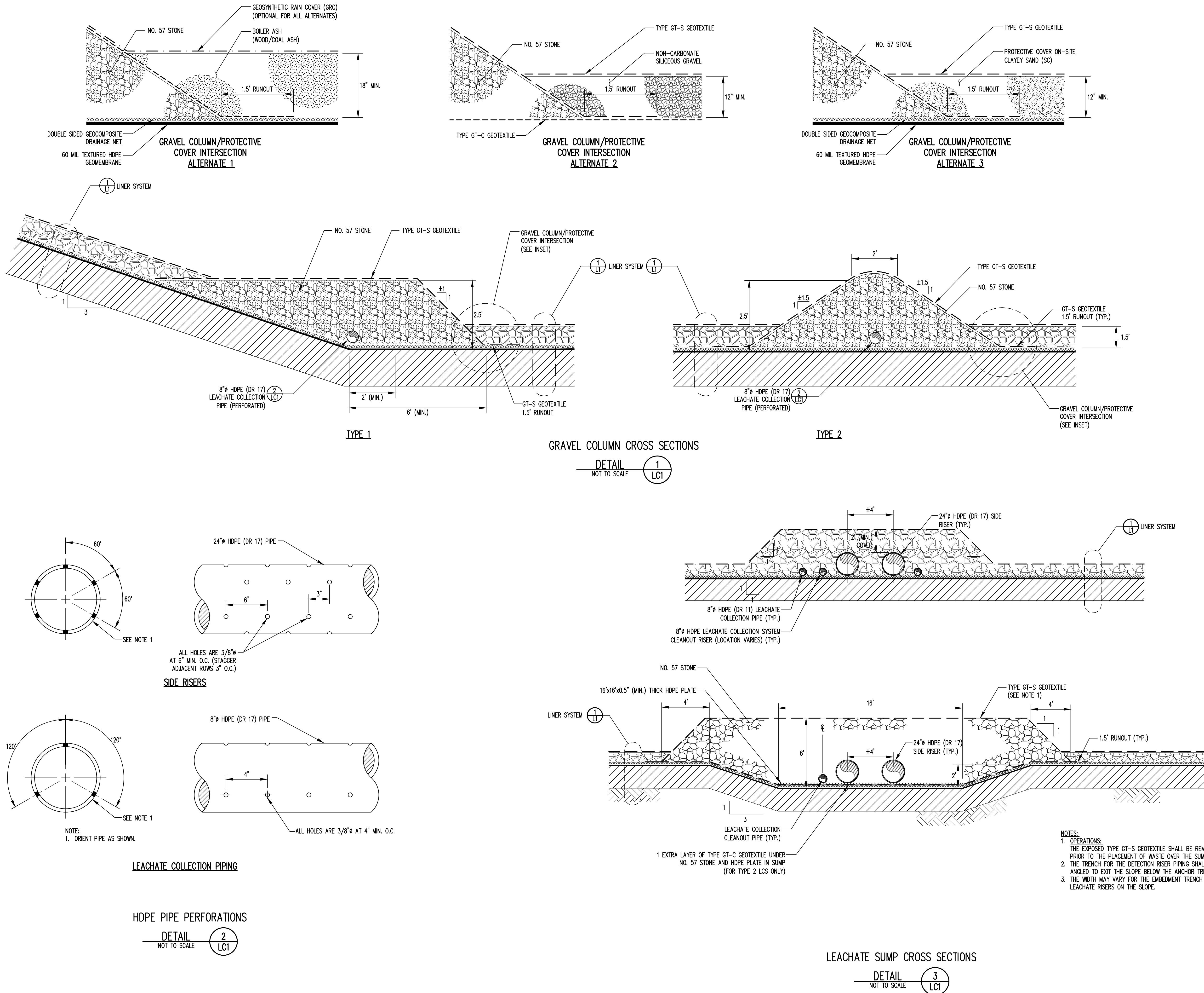
**HARBERT TRACT
CLASS II LANDFILL
PERMIT DRAWINGS**

DRAWING TITLE:

LINER AND BERM DETAILS

DESIGNED:	PROJECT NO: JHPCA 13-1
DRAWN:	SCALE:
APPROVED:	DATE: APRIL 2015
FILENAME: JHPCA-D0130A	
SHEET NUMBER: 22	DRAWING NUMBER: 11

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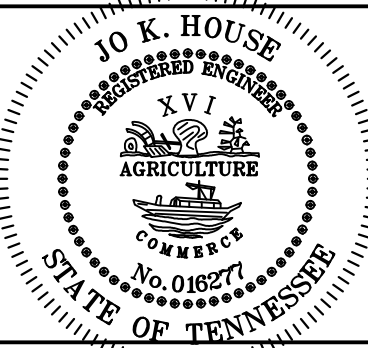
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4	AUG. 2015	RESPONSE TO 7/30/15 TDEC
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PROJECT TITLE:

HARBERT TRACT
CLASS II LANDFILL
PERMIT DRAWINGS

DRAWING TITLE:

LEACHATE COLLECTION
SYSTEM DETAILS
(SHEET 1 OF 2)

DESIGNED:	PROJECT NO:
DRAWN:	SCALE:
APPROVED:	DATE:
FILENAME:	JHPCA-D0131C
SHEET NUMBER:	DRAWING NUMBER:

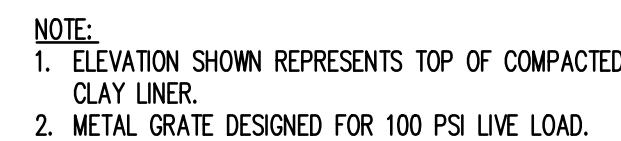
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LC1

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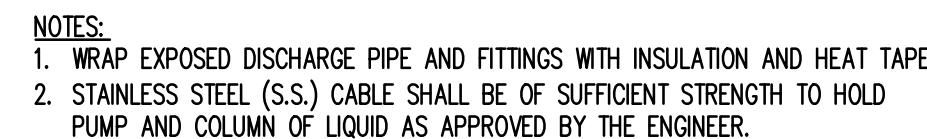
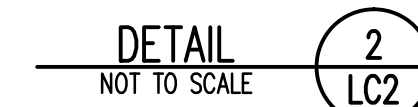
**HARBERT TRACT
CLASS II LANDFILL
PERMIT DRAWINGS**

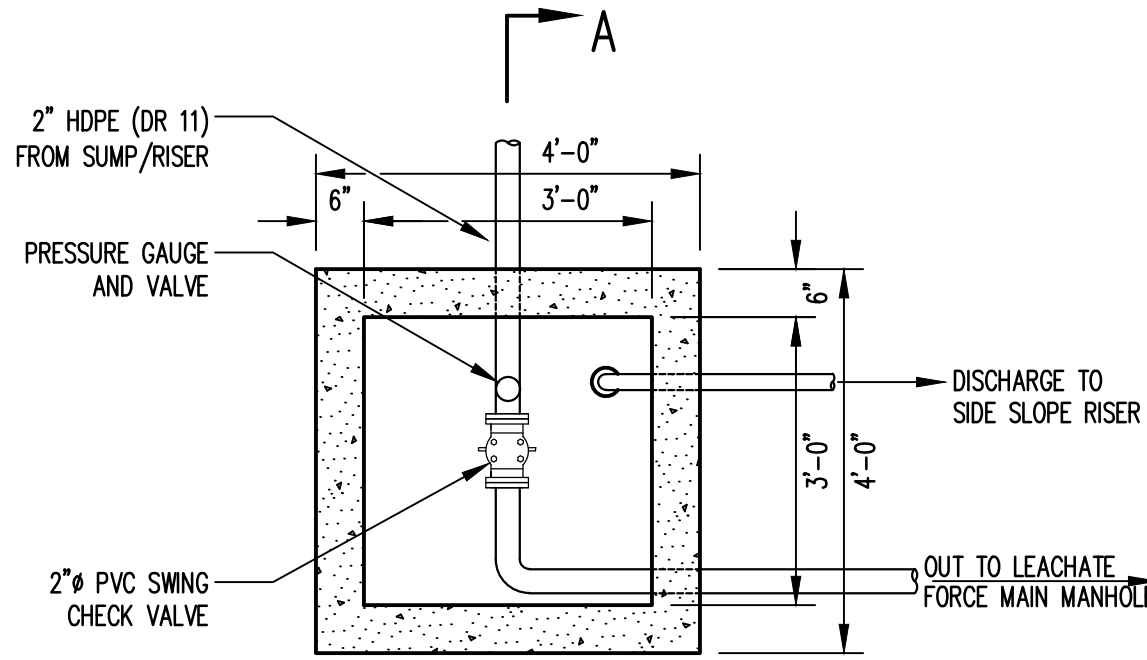
**LEACHATE COLLECTION
SYSTEM DETAILS
(SHEET 2 OF 2)**

24 LC2

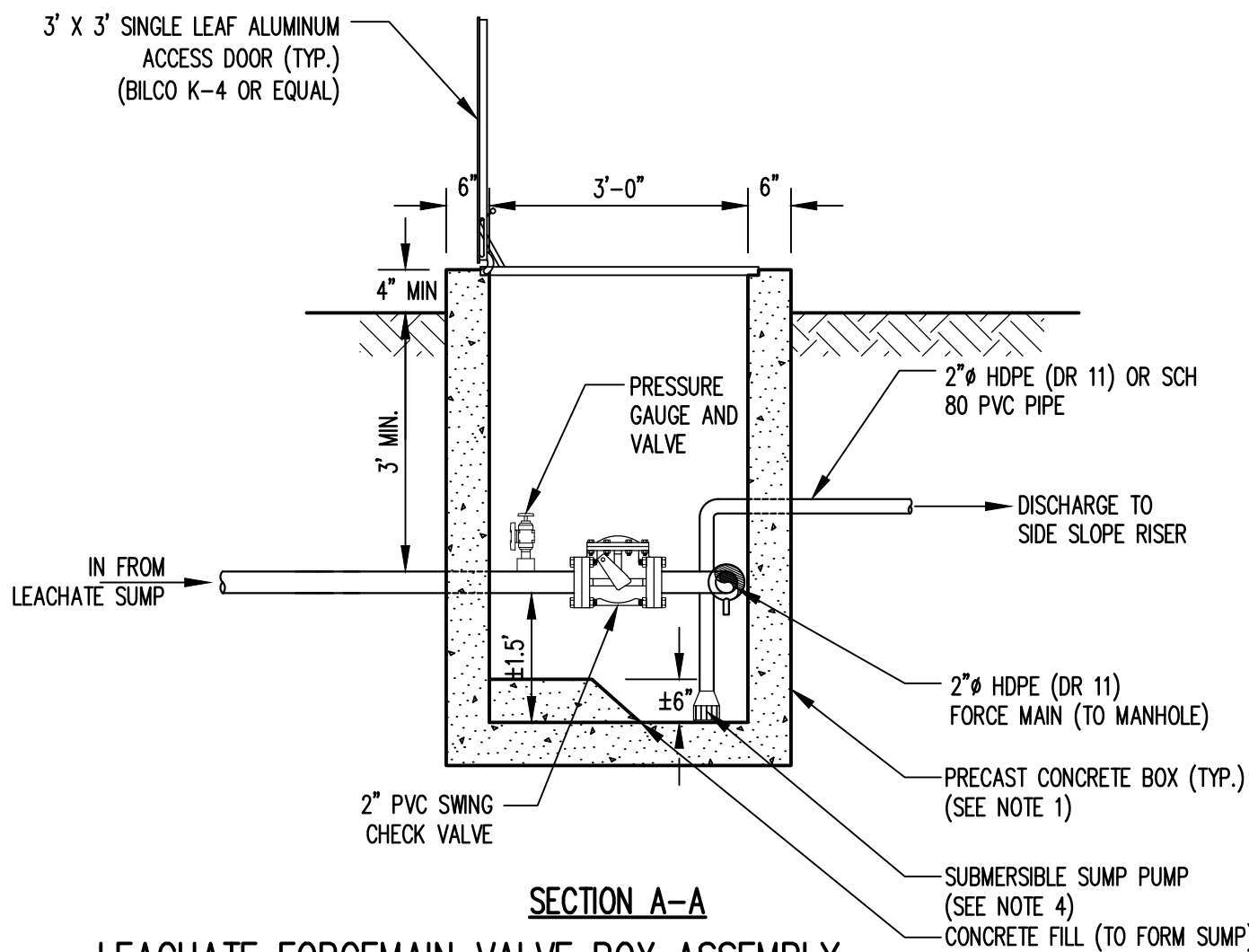
DETAIL 1
NOT TO SCALE LC2

SUMP ELEVATION SCHEDULE				
CELL	A	B	C	D
1	512	511	510	509
2	521	520	519	518
3/4	503	502	501	500
5	510	509	508	507





PLAN VIEW

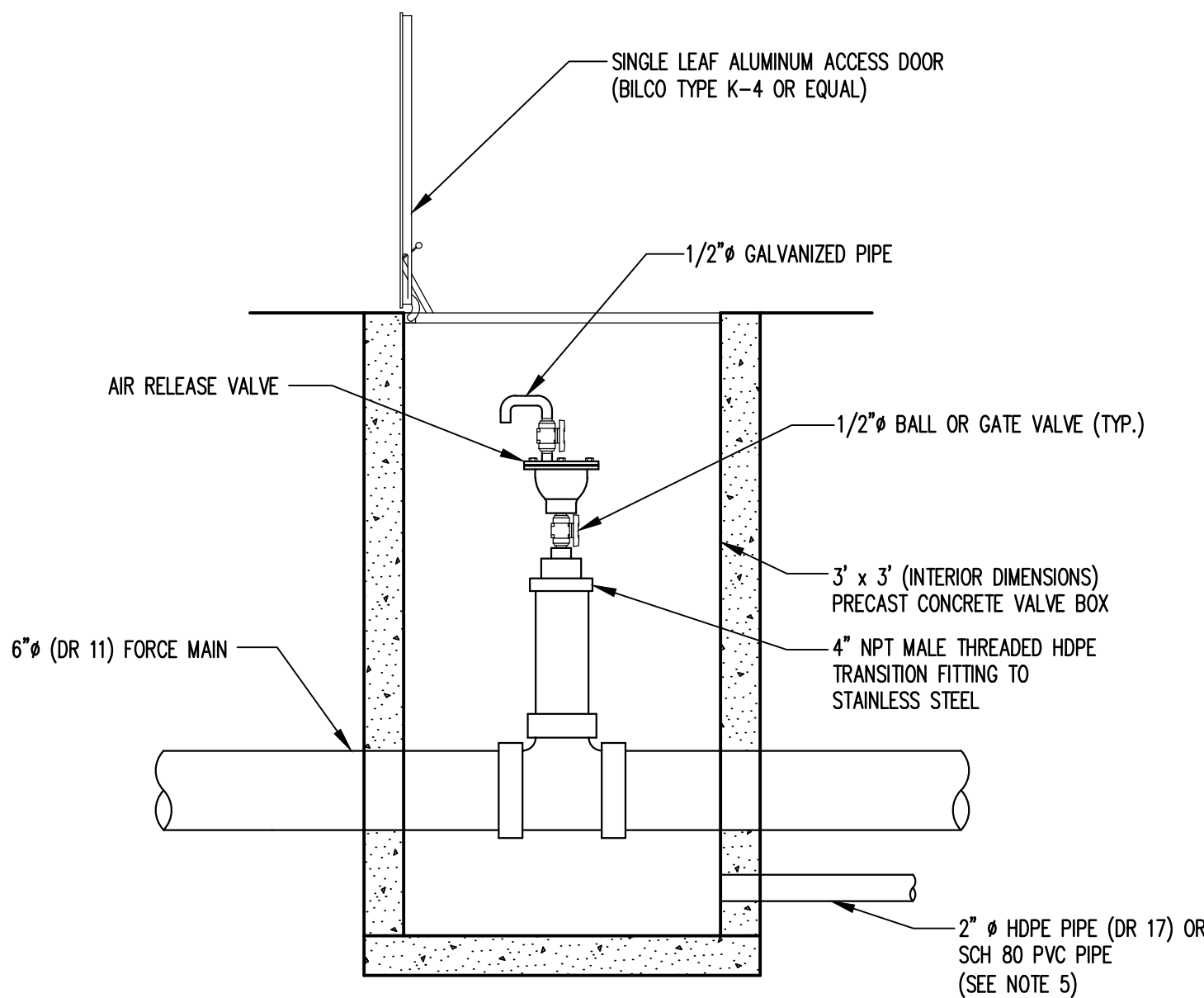


SECTION A-A

LEACHATE FORCEMAIN VALVE BOX ASSEMBLY

DETAIL 1
NOT TO SCALE LM1

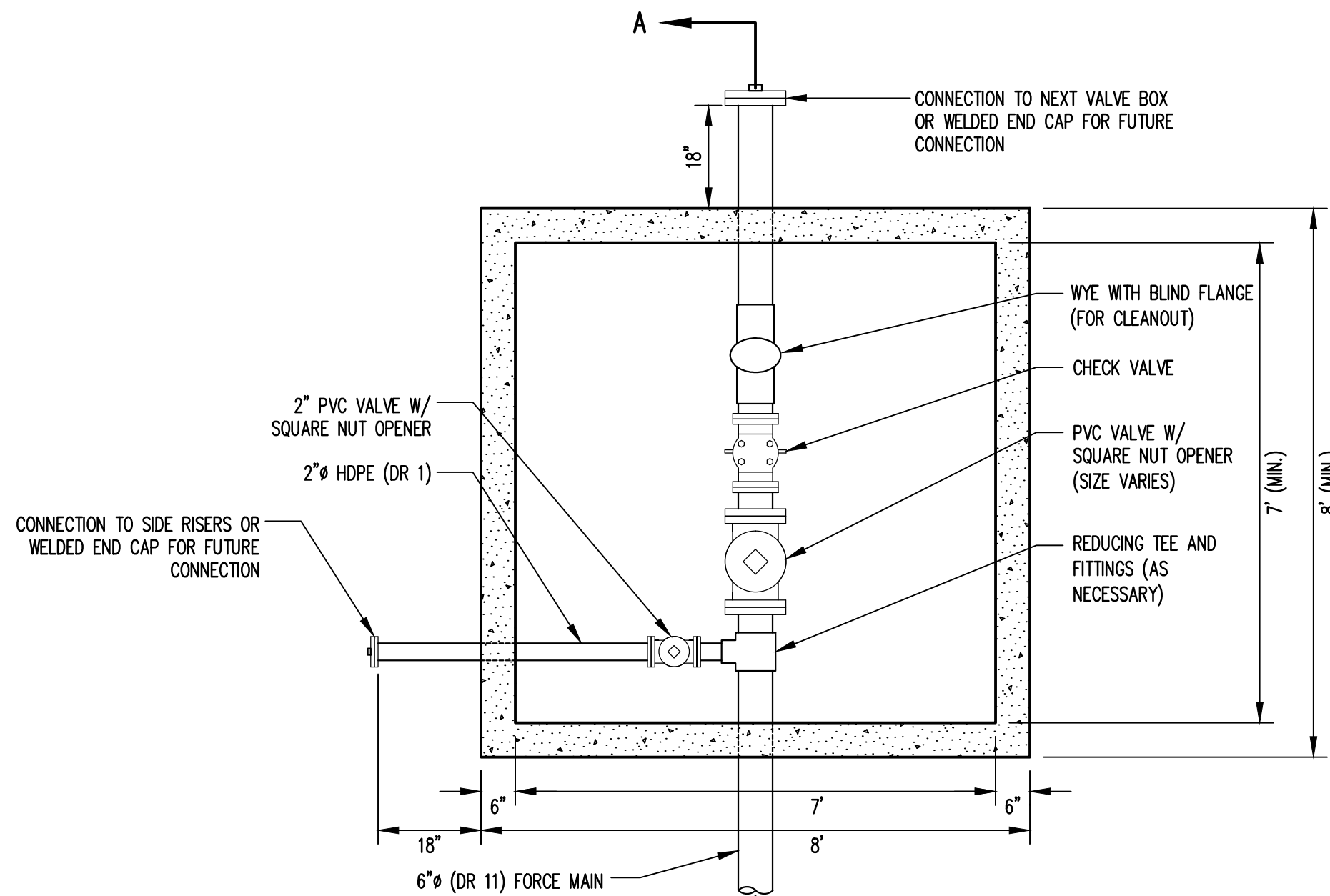
- NOTES:
- PRECAST CONCRETE BOXES AND COVERS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
 - CONCRETE: COMPRESSIVE STRENGTH 4,000 PSI
 - REINFORCING: ASTM A-615, GRADE 60
 - MEETS H-20 LOADING.
 - CONTRACTOR SHALL PROVIDE CONCRETE THRUST BLOCKING AND VALVE SUPPORTS AS REQUIRED.
 - CONTRACTOR SHALL VERIFY THAT THE SELECTED BOX IS ADEQUATELY SIZED TO FIT THE PROPOSED VALVES AND FITTINGS.
 - INSTALL SUMP PUMP OR INSTALL 6" HDPE GRAVITY DRAIN PIPE AT MIN. 0.5% SLOPE TO DISCHARGE INTO CLEANOUT OR RISER.
 - ALL PENETRATIONS SHALL BE SEALED WITH NON-SHRINKING GROUT.
 - ADDITIONAL IN-LINE MANHOLES MAY BE ADDED AT THE OPERATOR'S DISCRETION FOR LEACHATE LINE CLEANOUT PURPOSES.



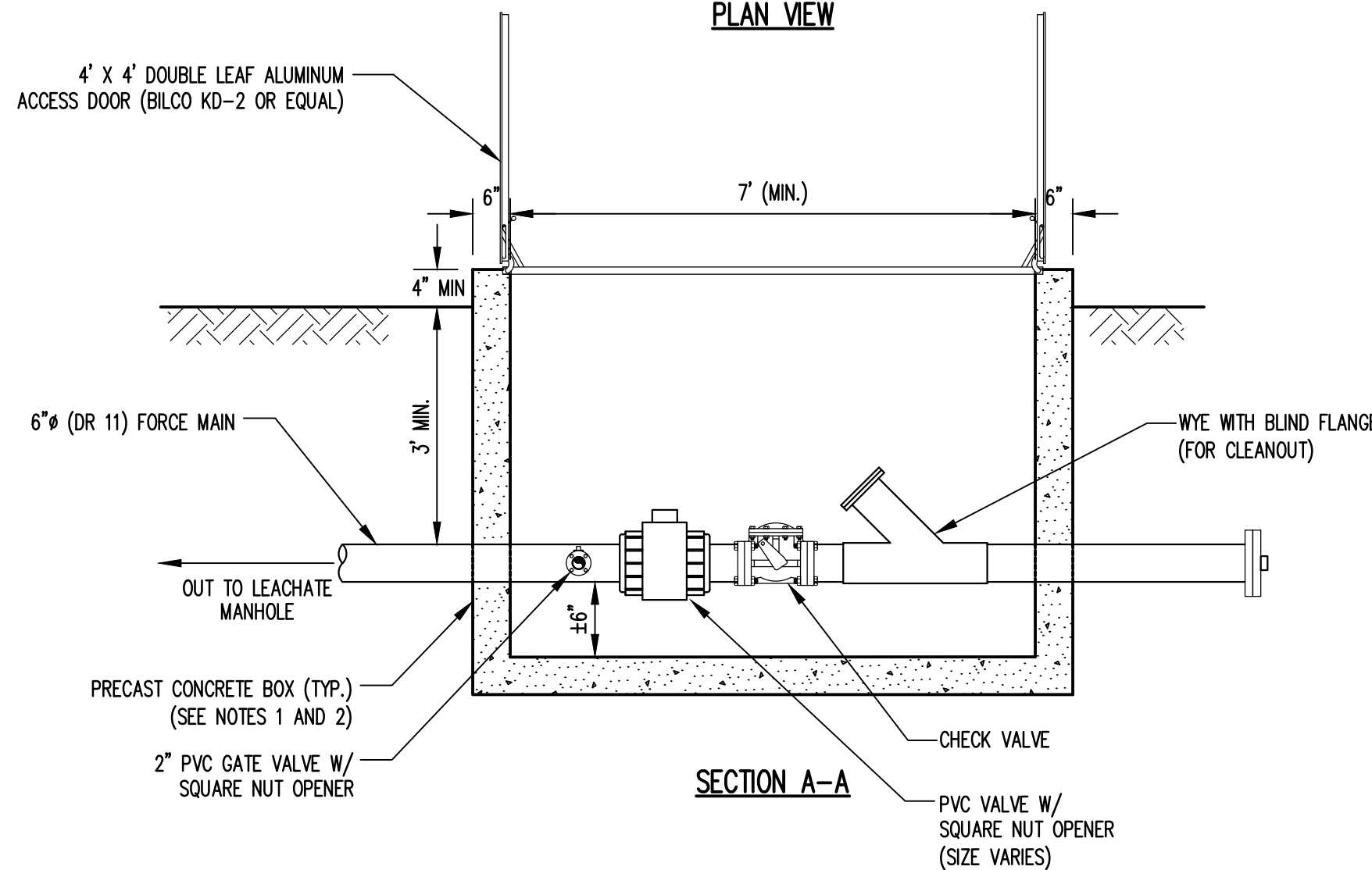
AIR RELEASE AND VACUUM VALVE ASSEMBLY

DETAIL 3
NOT TO SCALE LM1

- NOTES:
- PRECAST CONCRETE BOXES AND COVERS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
 - CONCRETE: COMPRESSIVE STRENGTH 4,000 PSI
 - REINFORCING: ASTM A-615, GRADE 60
 - MEETS H-20 LOADING.
 - CONTRACTOR SHALL PROVIDE CONCRETE THRUST BLOCKING AND VALVE SUPPORTS AS REQUIRED.
 - CONTRACTOR SHALL VERIFY THAT THE SELECTED BOX IS ADEQUATELY SIZED TO FIT THE PROPOSED VALVES AND FITTINGS.
 - PLACE UP TO FOUR (4) BOLLARDS AROUND COMPLETED STRUCTURE AS DIRECTED BY THE OWNER AND ENGINEER.
 - INSTALL 2" PIPE TO GRAVITY DRAIN (AT 0.5% MIN. SLOPE) THE AIR RELEASE VALVE BOX TO THE LEACHATE COLLECTION SYSTEM IN THE LINED LANDFILL.



PLAN VIEW

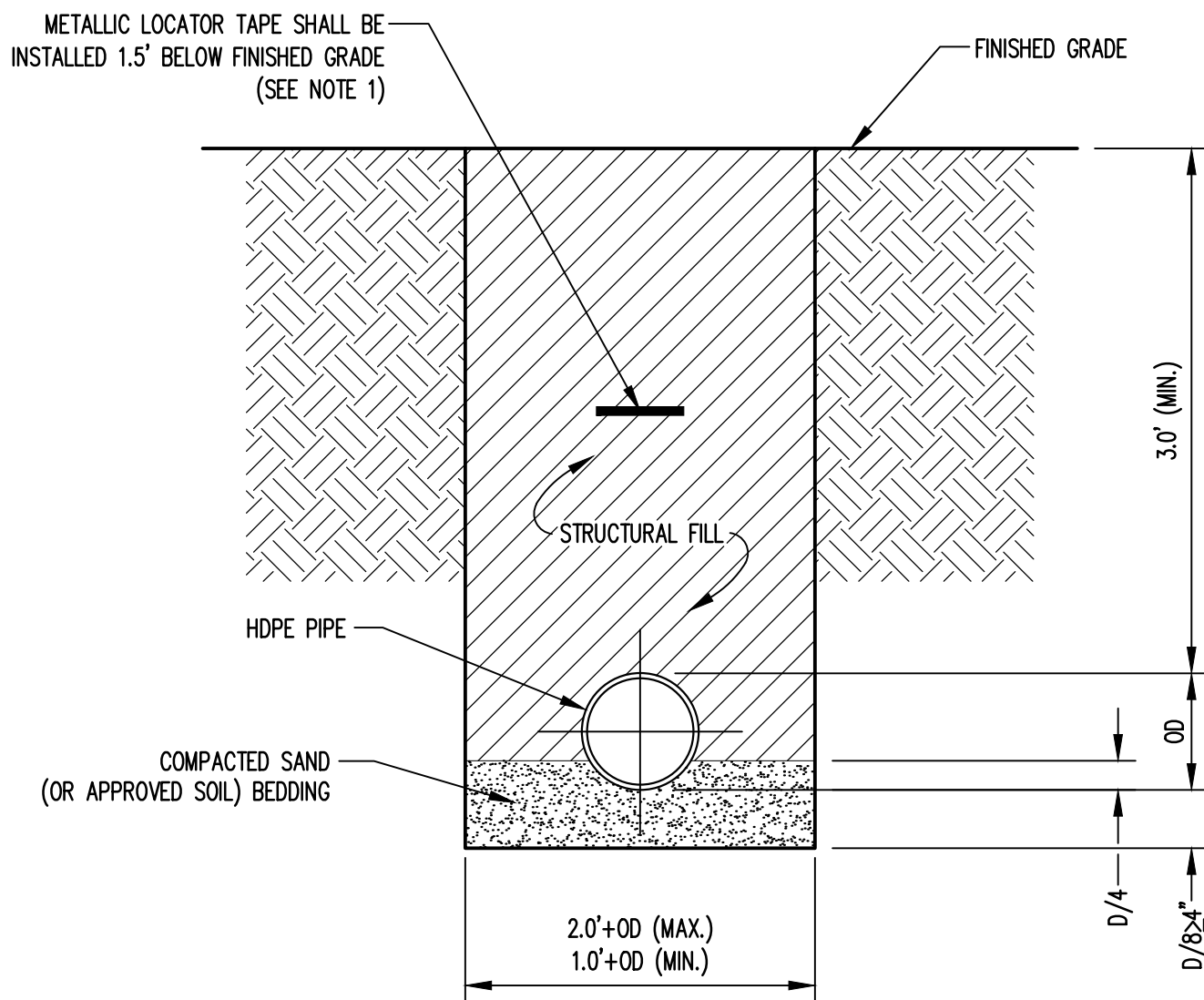


SECTION A-A

ISOLATION VALVE BOX ASSEMBLY

DETAIL 2
NOT TO SCALE LM1

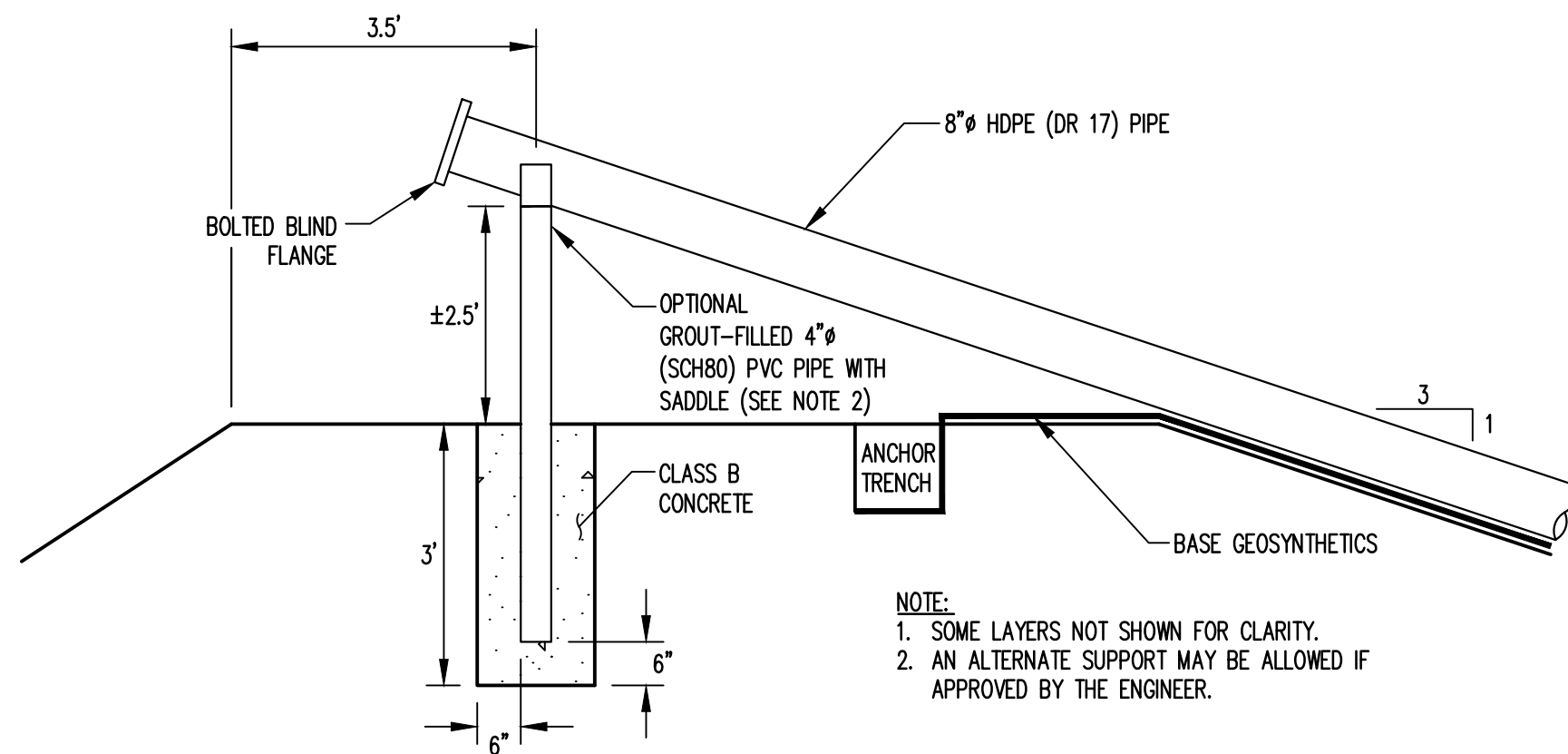
- NOTES:
- HDPE MANHOLE MAY BE SUBSTITUTED FOR PRECAST CONCRETE BOX.
 - PRECAST CONCRETE BOXES AND COVERS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
 - CONCRETE: COMPRESSIVE STRENGTH 4,000 PSI
 - REINFORCING: ASTM A-615, GRADE 60
 - MEETS H-20 LOADING.
 - CONTRACTOR SHALL PROVIDE CONCRETE THRUST BLOCKING AND VALVE SUPPORTS AS REQUIRED.
 - CONTRACTOR SHALL VERIFY THAT THE SELECTED BOX IS ADEQUATELY SIZED TO FIT THE PROPOSED VALVES AND FITTINGS.
 - PLACE UP TO FOUR (4) BOLLARDS AROUND COMPLETED STRUCTURE AS DIRECTED BY THE OWNER AND ENGINEER.
 - ADDITIONAL IN-LINE MANHOLES MAY BE ADDED AT THE OPERATORS DISCRETION FOR LEACHATE LINE CLEANOUT PURPOSES.



NOTE:
1. ALTERNATIVELY USE ANOTHER APPROVED LOCATOR DEVICE.

HDPE PIPE BEDDING

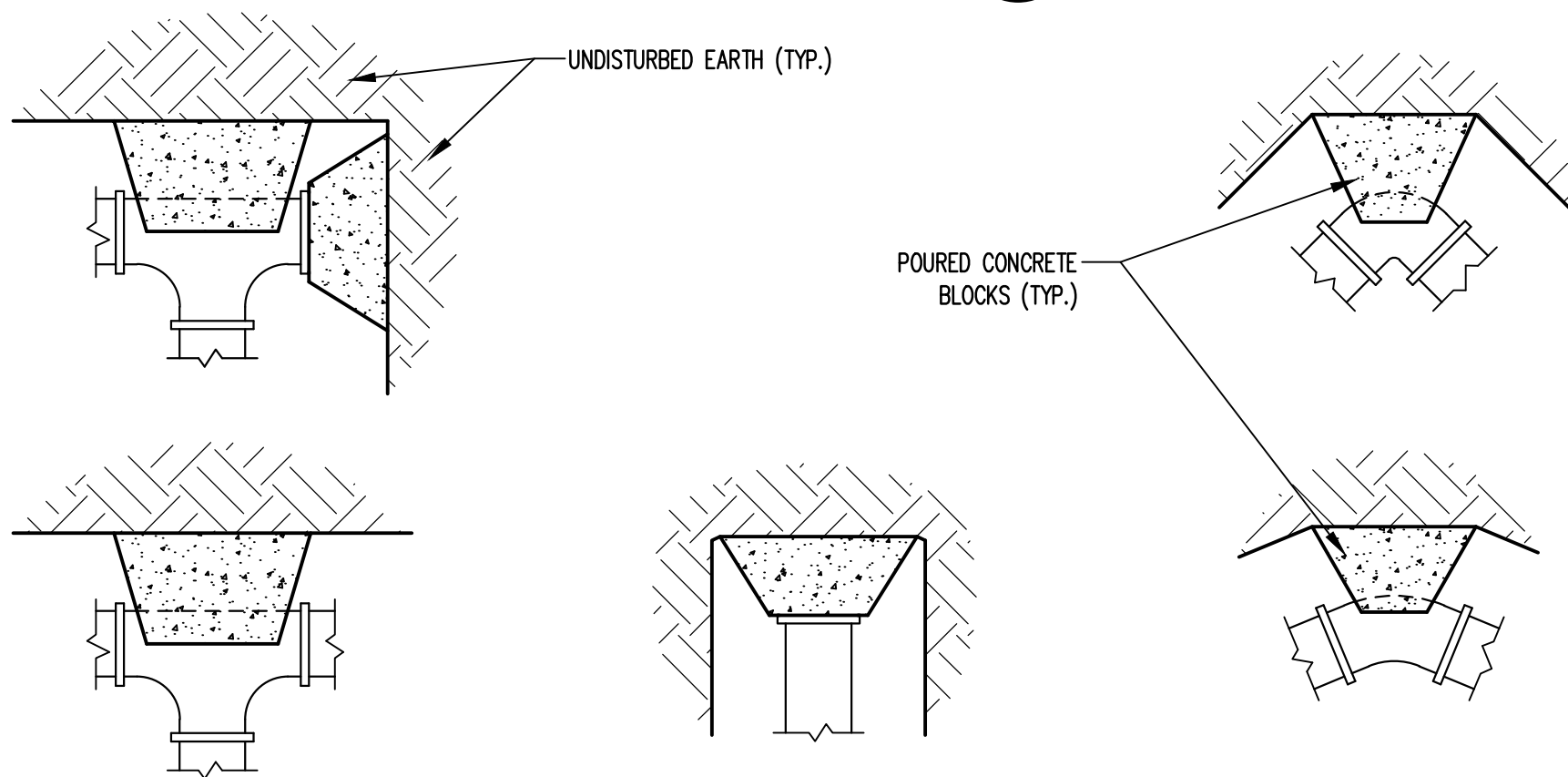
DETAIL 4
NOT TO SCALE LM1



NOTE:
1. SOME LAYERS NOT SHOWN FOR CLARITY.
2. AN ALTERNATE SUPPORT MAY BE ALLOWED IF APPROVED BY THE ENGINEER.

LEACHATE COLLECTION CLEANOUT

DETAIL 5
NOT TO SCALE LM1



- NOTES:
- THESE DETAILS ARE FOR BOTH VERTICALLY AND HORIZONTALLY LAID PIPE.
 - POURED IN PLACE CONCRETE SHALL BE CLASS B.
 - LEAVE JOINTS CLEAR OF CONCRETE FOR EASY ACCESS.
 - POLYETHYLENE SHALL BE WRAPPED AROUND FITTINGS WHERE CONCRETE BLOCKING WILL EVENTUALLY BE REMOVED.
 - THE CRITICAL CONDITION OF UNDISTURBED EARTH IS ANTICIPATED TO BE SILTY SAND.
 - FITTING FACTORS:

REQUIRED AREA OF BLOCK FACE EARTH BEARING (B) SHALL BE FIGURED AS FOLLOWS WHERE:

B = AREA OF BLOCK FACE (FT.)
A = AREA OF PIPE DIA. IN SQ. IN.
P = DESIGN WORKING PRESS, PSI.
C = FITTING FACTOR
B = $\frac{P \cdot A \cdot C}{2000}$

THRUST BLOCKS

DETAIL 6
NOT TO SCALE LM1

PREPARED FOR:

PACKAGING CORPORATION
OF AMERICA
COUNCE, TENNESSEE

PREPARED BY:

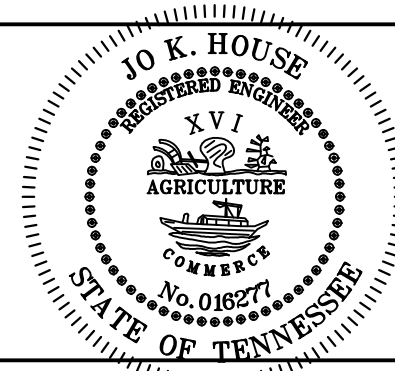
SMITH+
GARDNER
ENGINEERS

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

PREPARED BY:

HOUSE ENGINEERING, LLC
7308 River Park Drive, Nashville, TN 37221
Phone: (615) 330-0771 - Fax: (615) 891-2821

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PROJECT TITLE:

HARBERT TRACT
CLASS II LANDFILL
PERMIT DRAWINGS

DRAWING TITLE:

LEACHATE MANAGEMENT
SYSTEM DETAILS

DESIGNED: PROJECT NO: JHPCA 13-1

DRAWN: SCALE:

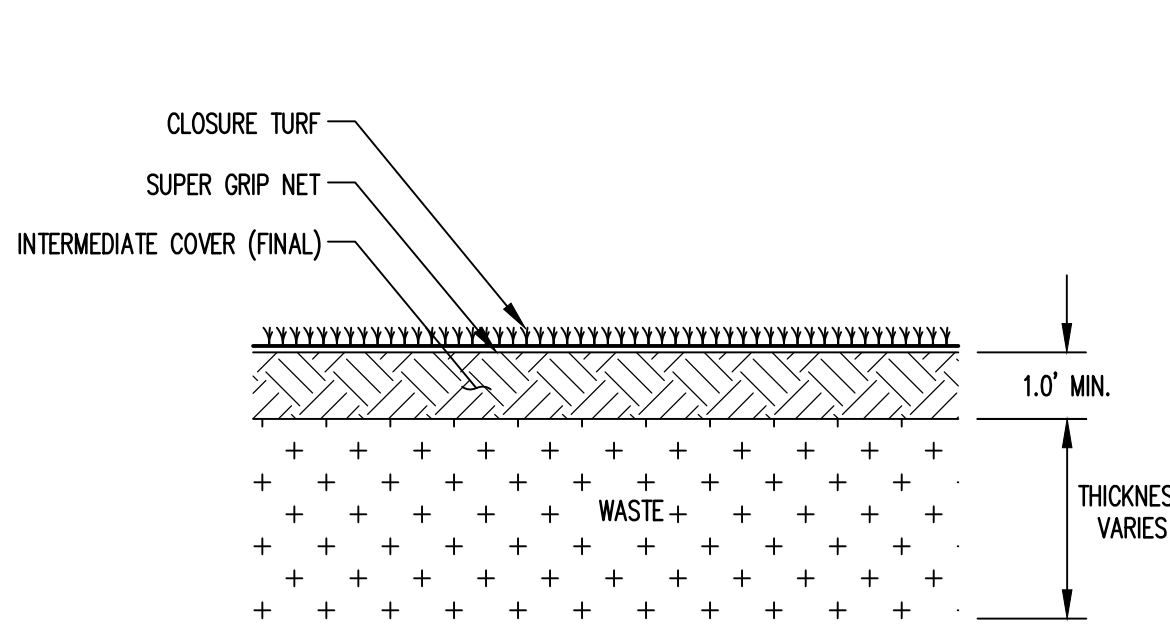
APPROVED: DATE: APRIL 2015

FILENAME: JHPCA-D0132

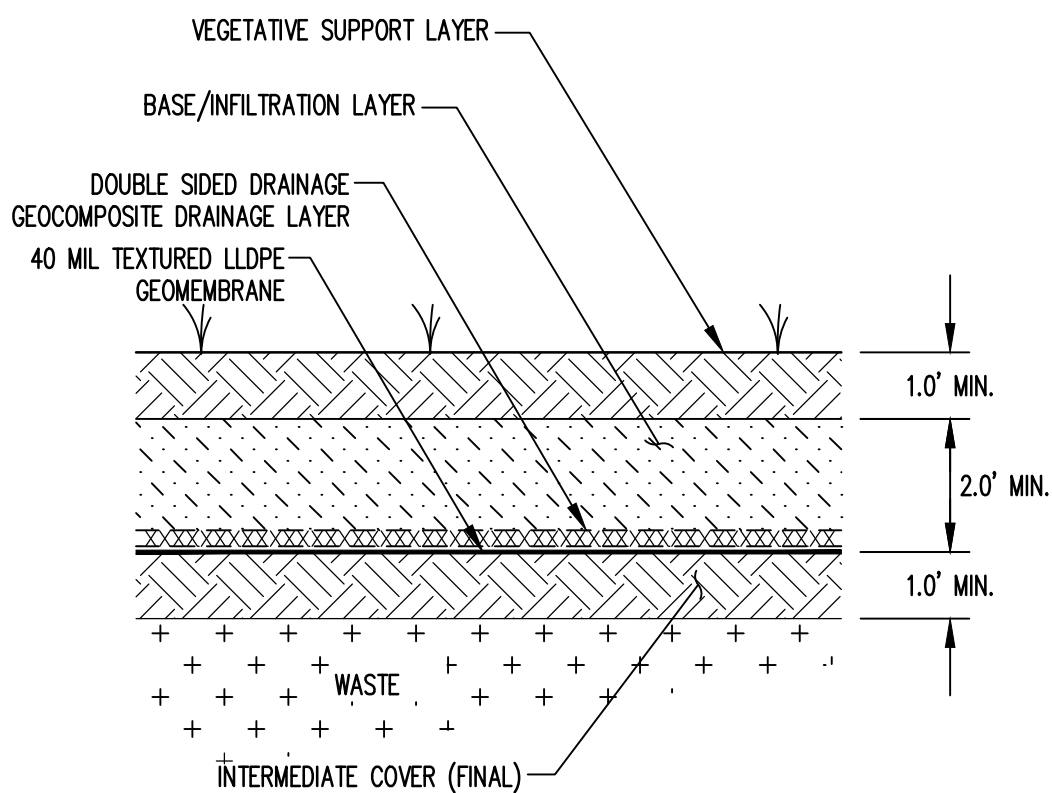
SHEET NUMBER: DRAWING NUMBER:

25

LM1



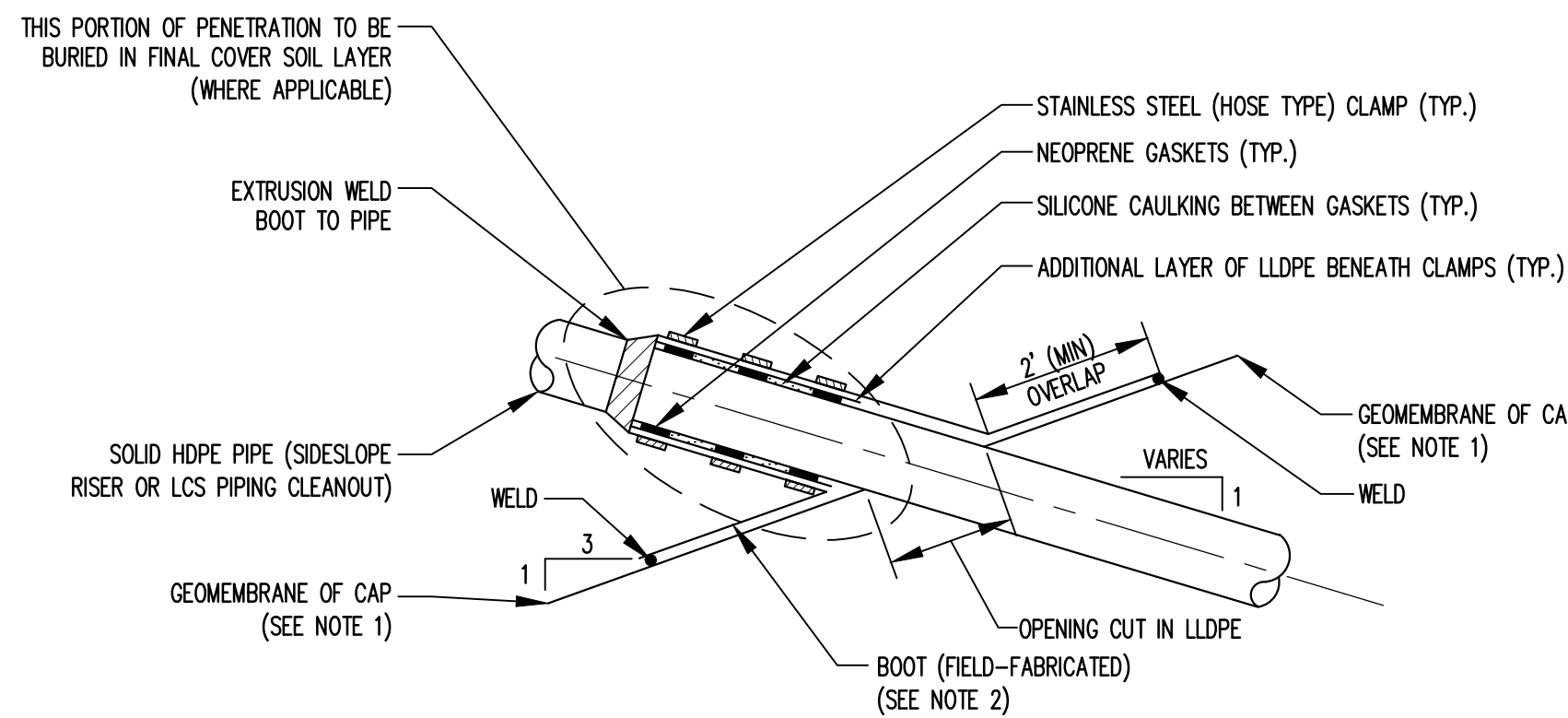
ALTERNATE 1



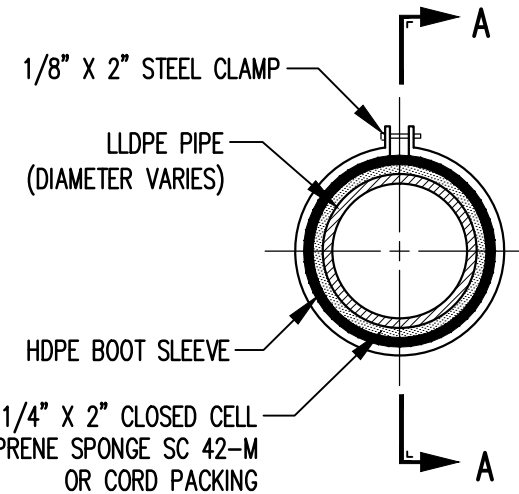
ALTERNATE 2

FINAL COVER SYSTEM

DETAIL 1 FC1
NOT TO SCALE



SECTION A-A



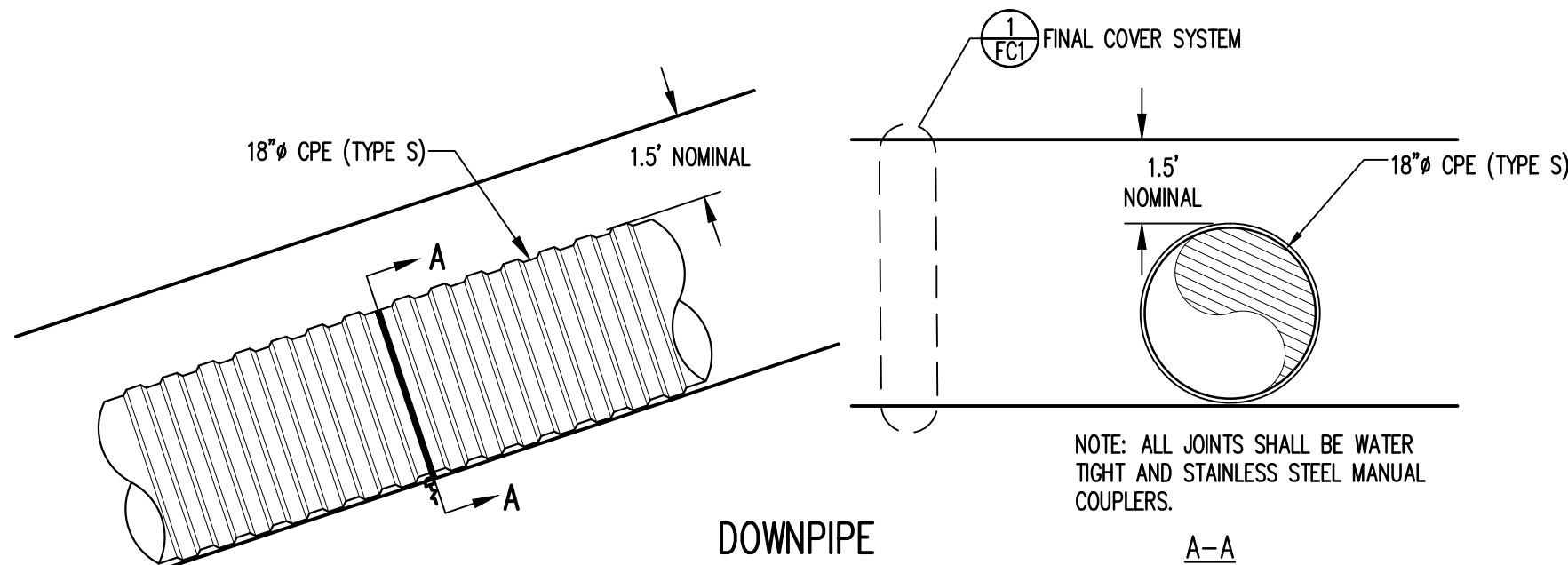
PIPE BOOT THROUGH CAP

DETAIL 2 FC1
NOT TO SCALE

- NOTES:
1. CAP GEOMEMBRANE IS 40 MIL TEXTURED LLDPE AND LINER GEOMEMBRANE IS 60 MIL TEXTURED HDPE.
 2. THE GEOMEMBRANE OF THE BOOT SHALL BE OF THE SAME MATERIAL AND THICKNESS AS THE GEOMEMBRANE TO WHICH IT IS WELDED (I.E. 40 MIL LLDPE OR 60 MIL HDPE).

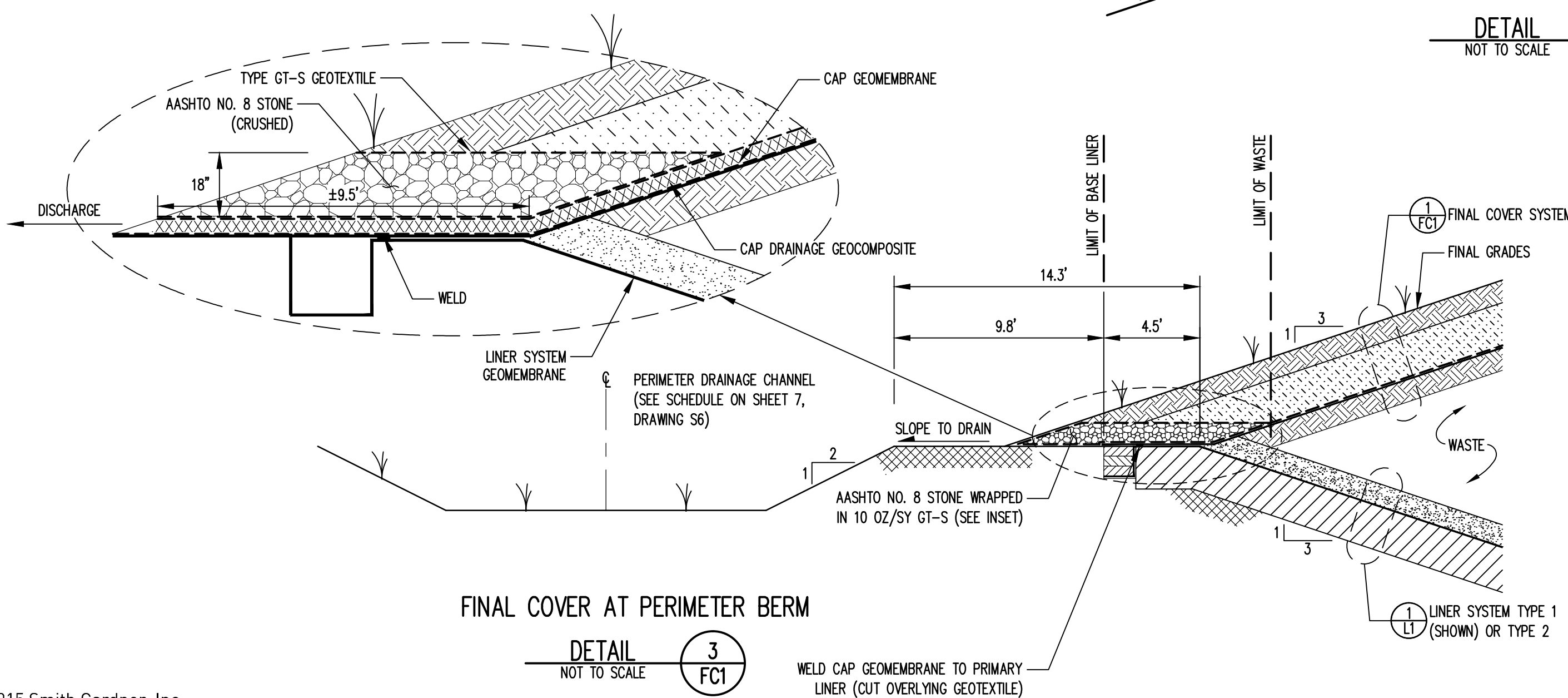
FINAL COVER DIVERSION BERM OUTLET

DETAIL 7 FC1
NOT TO SCALE



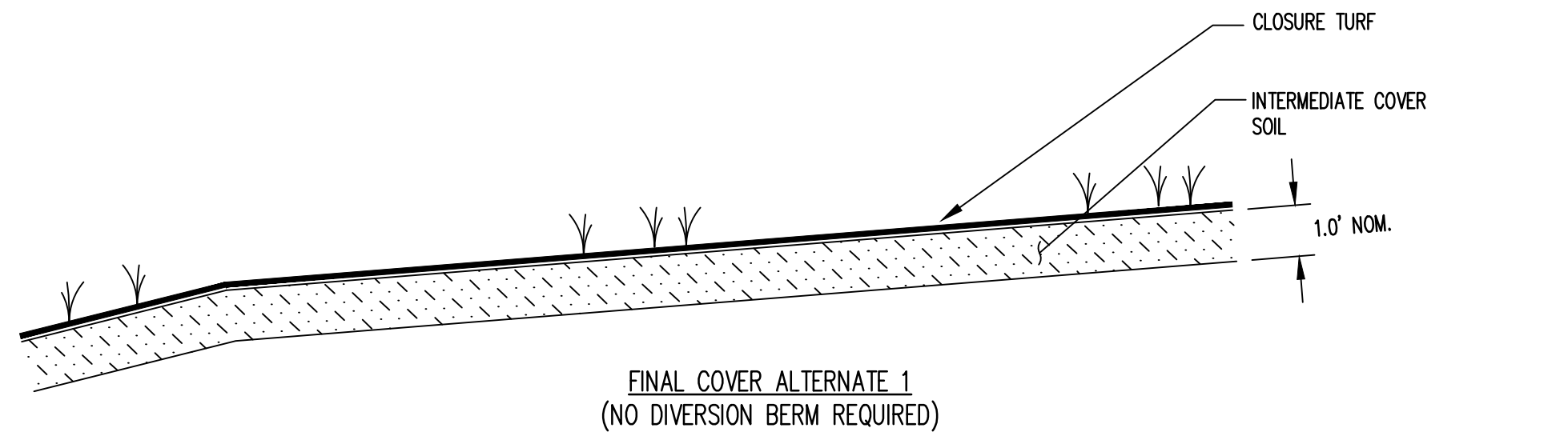
DOWNPIPE

DETAIL 5 FC1
NOT TO SCALE

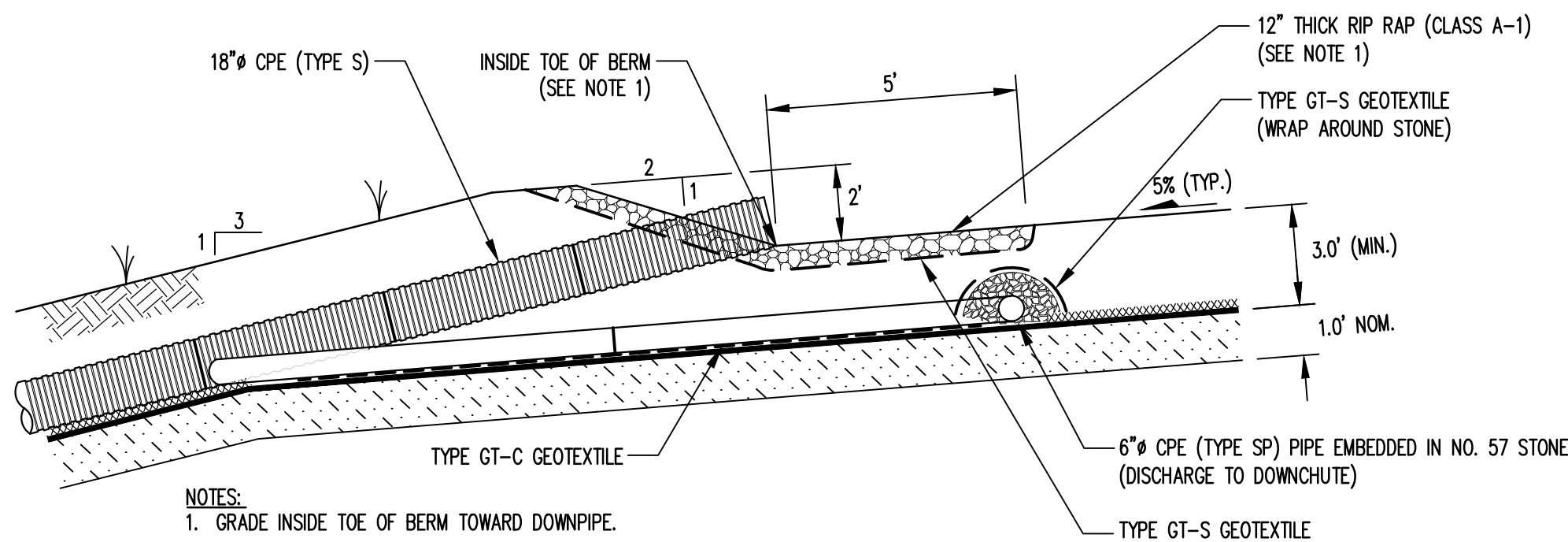


FINAL COVER AT PERIMETER BERM

DETAIL 3 FC1
NOT TO SCALE

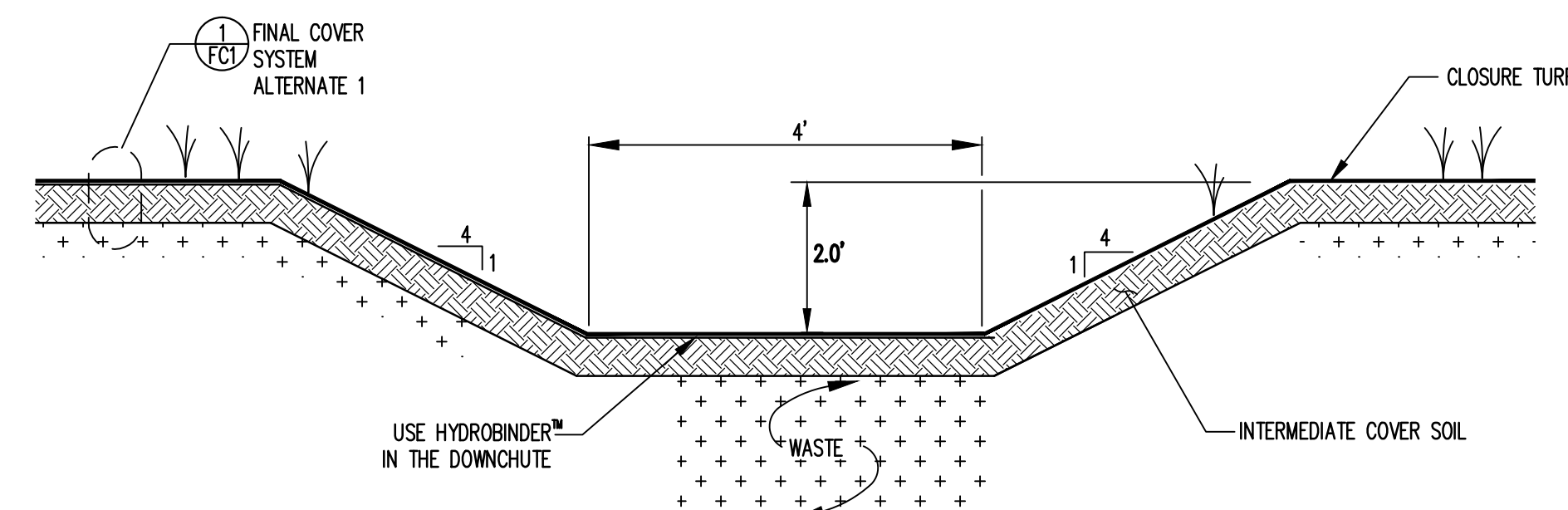


FINAL COVER ALTERNATE 1
(NO DIVERSION BERM REQUIRED)

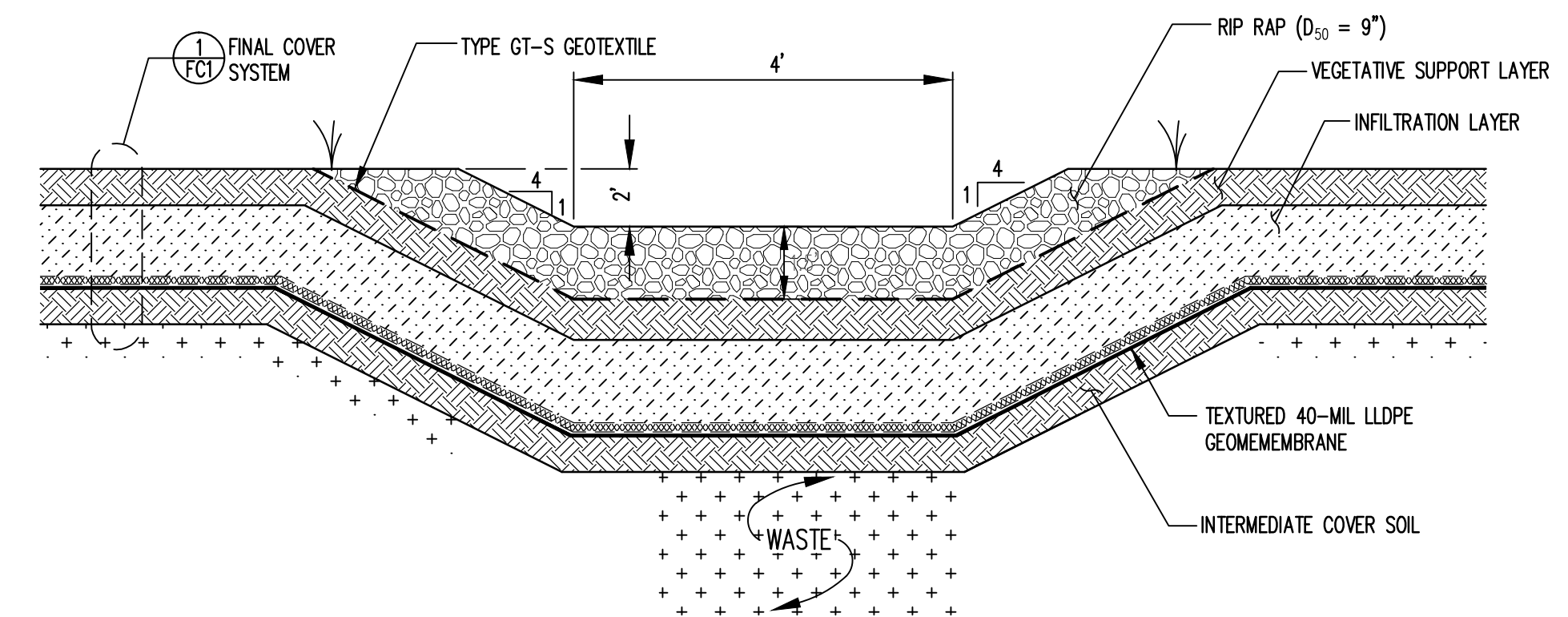


FINAL COVER DIVERSION BERM

DETAIL 4 FC1
NOT TO SCALE



DOWNCHUTE WITH FINAL COVER SYSTEM ALTERNATE 1



DOWNCHUTE

DETAIL 6 FC1
NOT TO SCALE

PREPARED FOR:

PACKAGING CORPORATION
OF AMERICA
COUNCE, TENNESSEE

PREPARED BY:

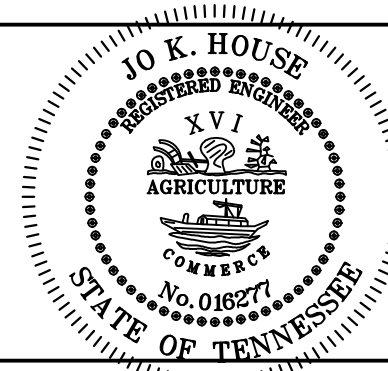
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PREPARED BY:

HOUSE ENGINEERING, LLC
7308 River Park Drive, Nashville, TN 37221
Phone: (615) 330-0771 - Fax: (615) 891-2821

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REV.	DATE	DESCRIPTION
2	APRIL 2015	RESPONSE TO TDEC
		NOD 2/25/15
3	JULY 2015	RESPONSE TO TDEC
		COMMENTS MAY 21, 2015

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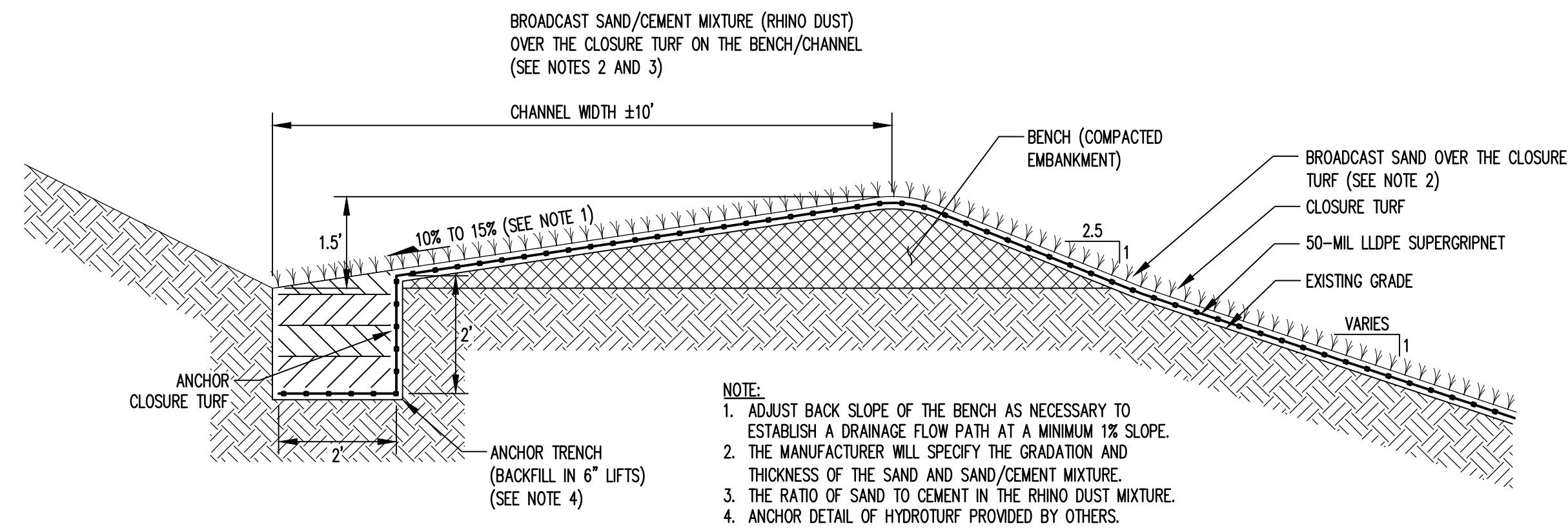
PROJECT TITLE:

HARBERT TRACT
CLASS II LANDFILL
PERMIT DRAWINGS

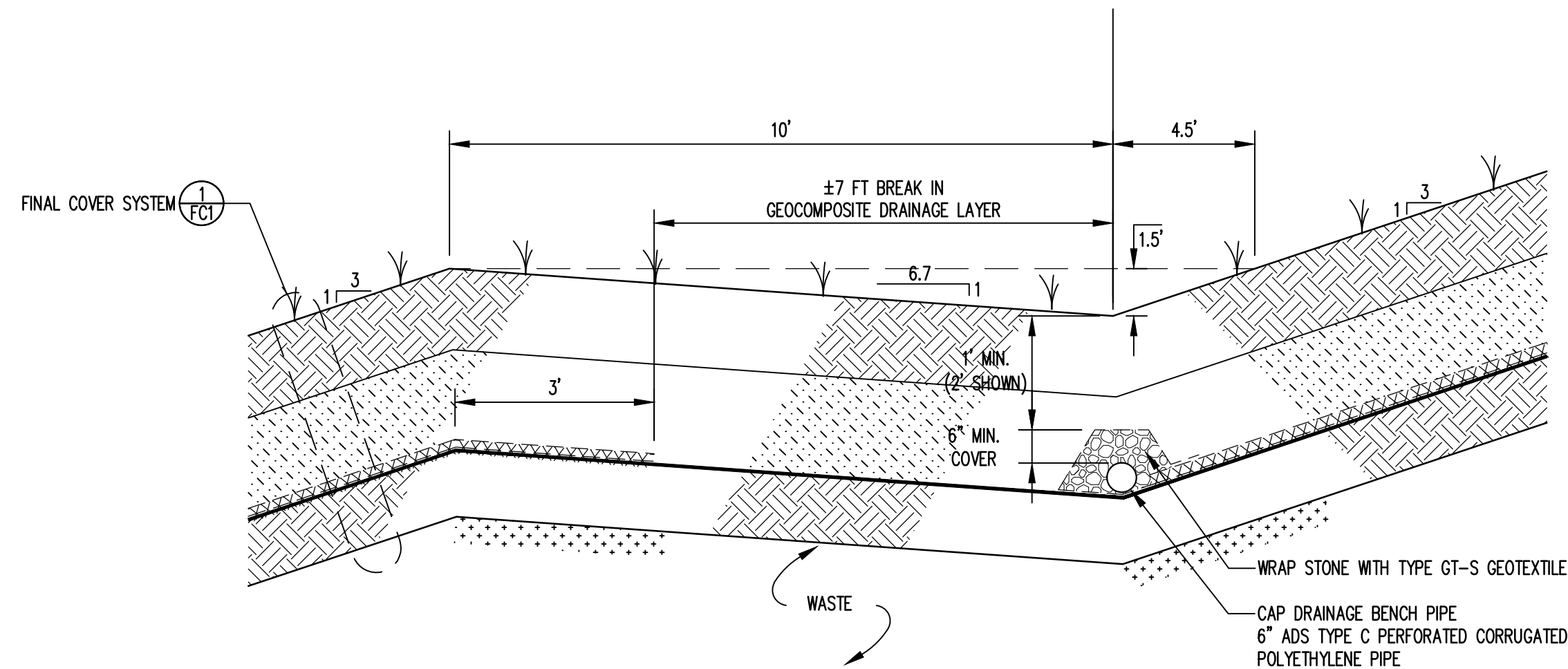
DRAWING TITLE:

FINAL COVER DETAILS
(SHEET 1 OF 2)

DESIGNED:	PROJECT NO:
DRAWN:	SCALE:
APPROVED:	DATE:
FILENAME:	JHPCA-D0133B
SHEET NUMBER:	DRAWING NUMBER:
26	FC1

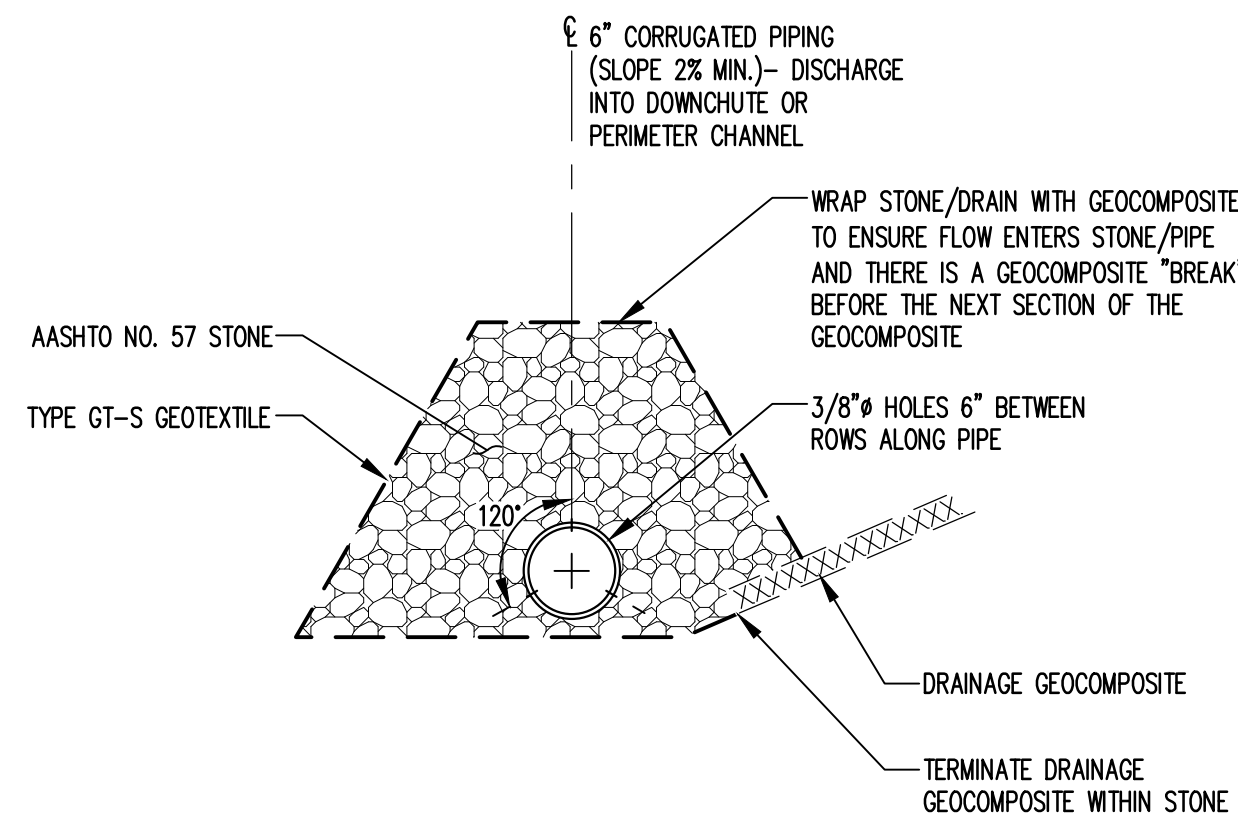
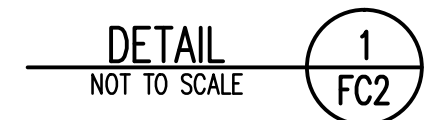


ALTERNATE 1

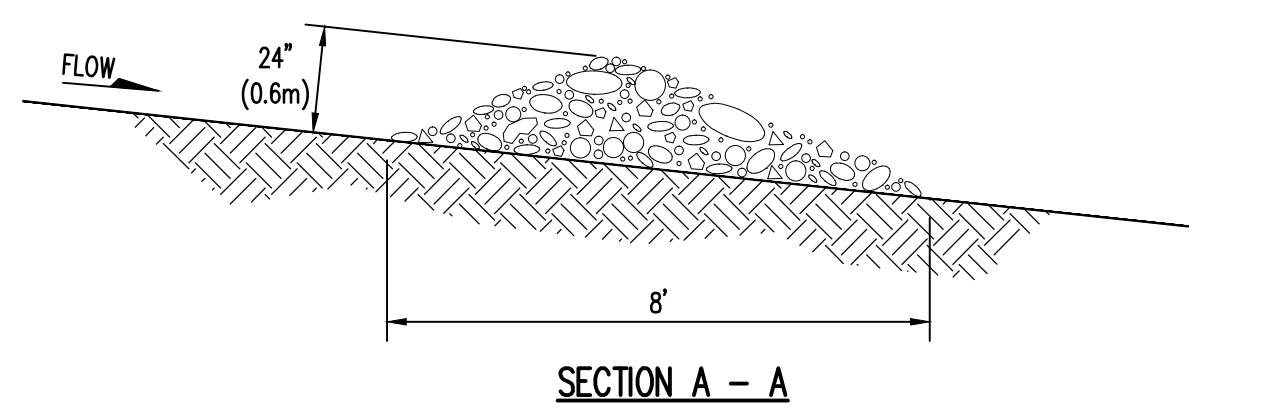
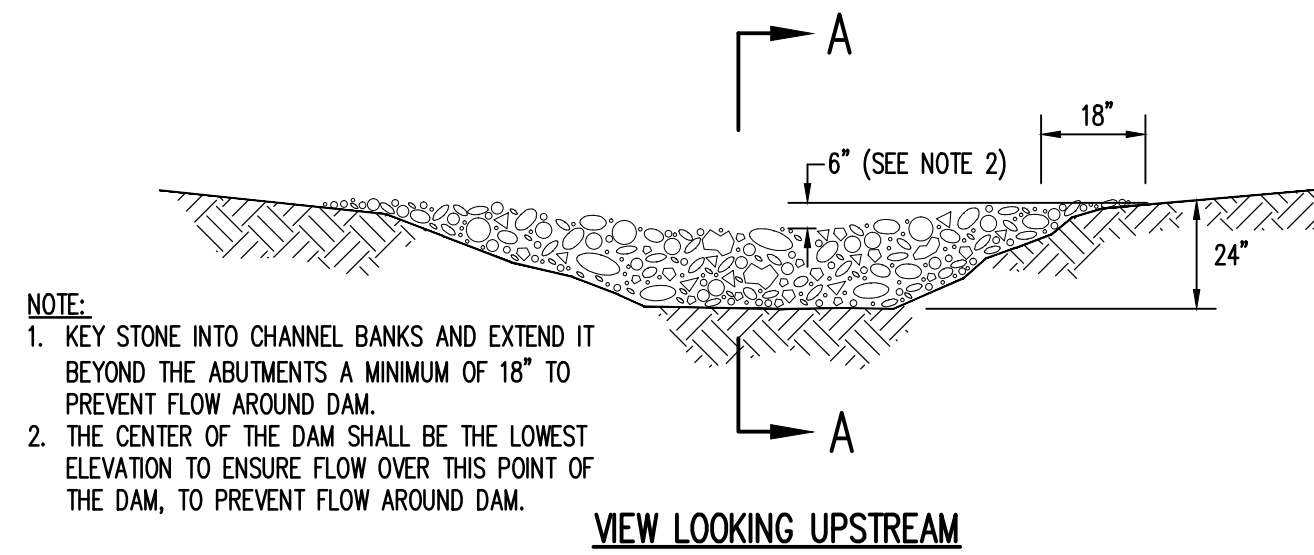
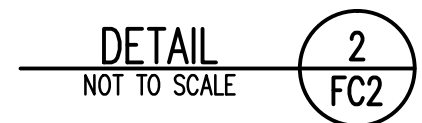


ALTERNATE 2

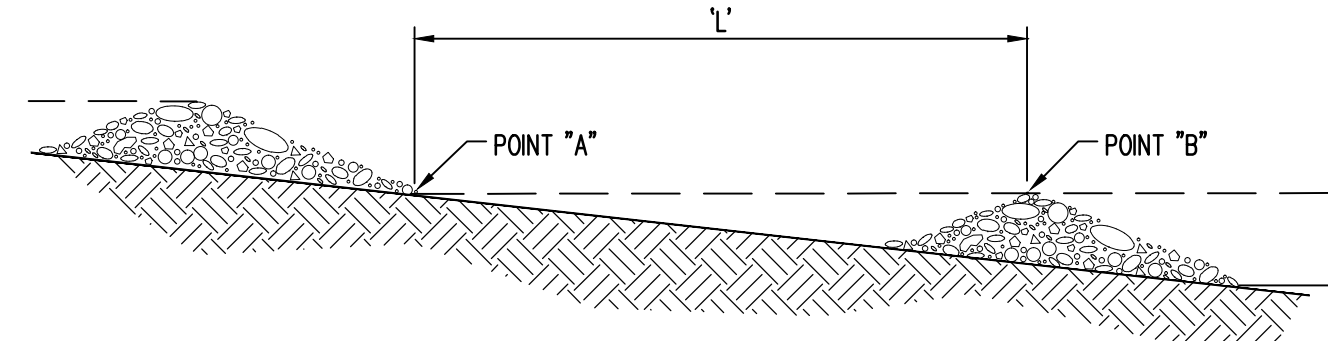
FINAL COVER TERRACE



CAP DRAINAGE BENCH PIPE



'L' = THE DISTANCE SUCH THAT POINTS 'A' AND 'B' ARE OF EQUAL ELEVATION.



SPACING BETWEEN CHECK DAMS

ROCK CHECK DAM



PREPARED FOR:

PACKAGING CORPORATION
OF AMERICA
COUNCE, TENNESSEE

PREPARED BY:

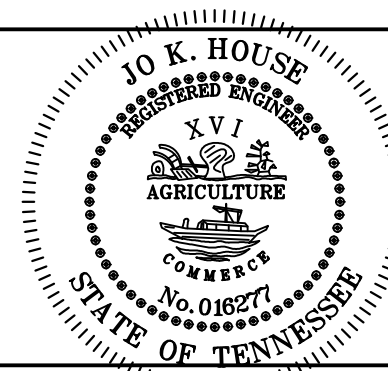
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REV.	DATE	DESCRIPTION
3	JULY 2015	RESPONSE TO TDEC
		COMMENTS MAY 21, 2015

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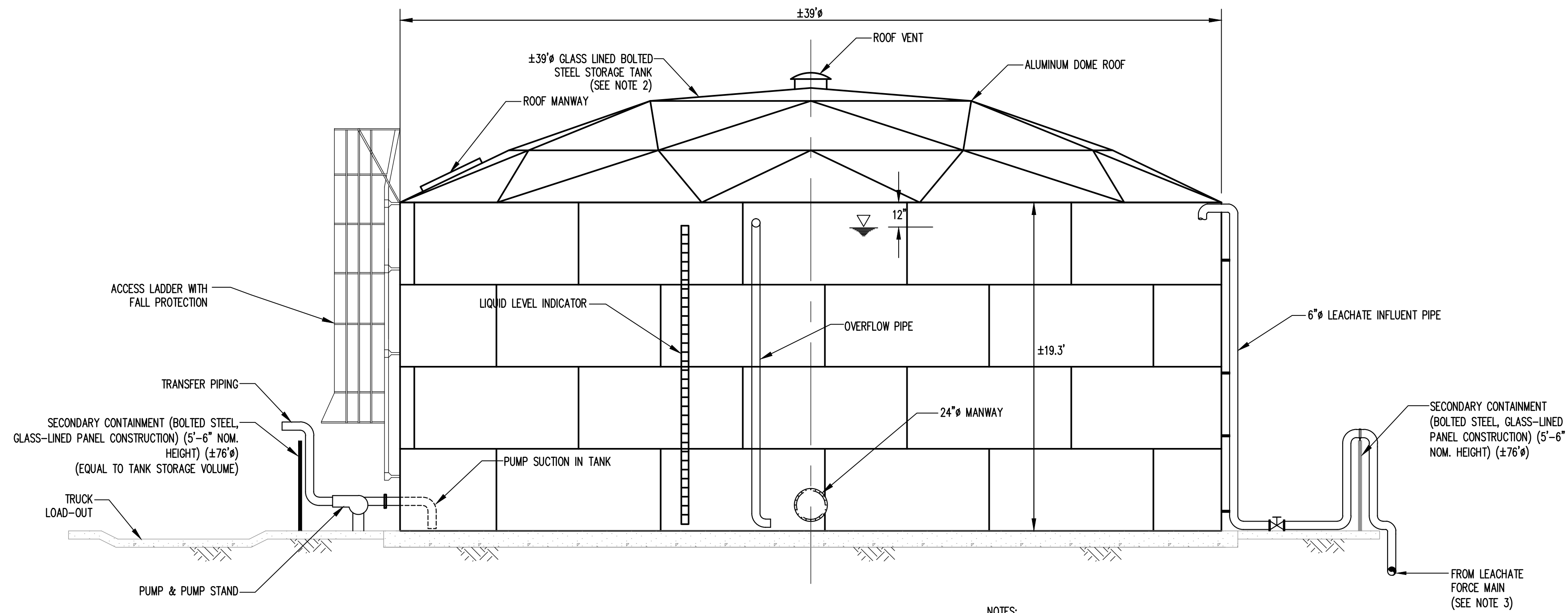
HARBERT TRACT
CLASS II LANDFILL
PERMIT DRAWINGS

DRAWING TITLE:

FINAL COVER DETAILS
(SHEET 2 OF 2)

DESIGNED:	PROJECT NO:
DRAWN:	SCALE:
APPROVED:	DATE:
FILENAME:	JHPCA-D0133B
SHEET NUMBER:	DRAWING NUMBER:
27	FC2

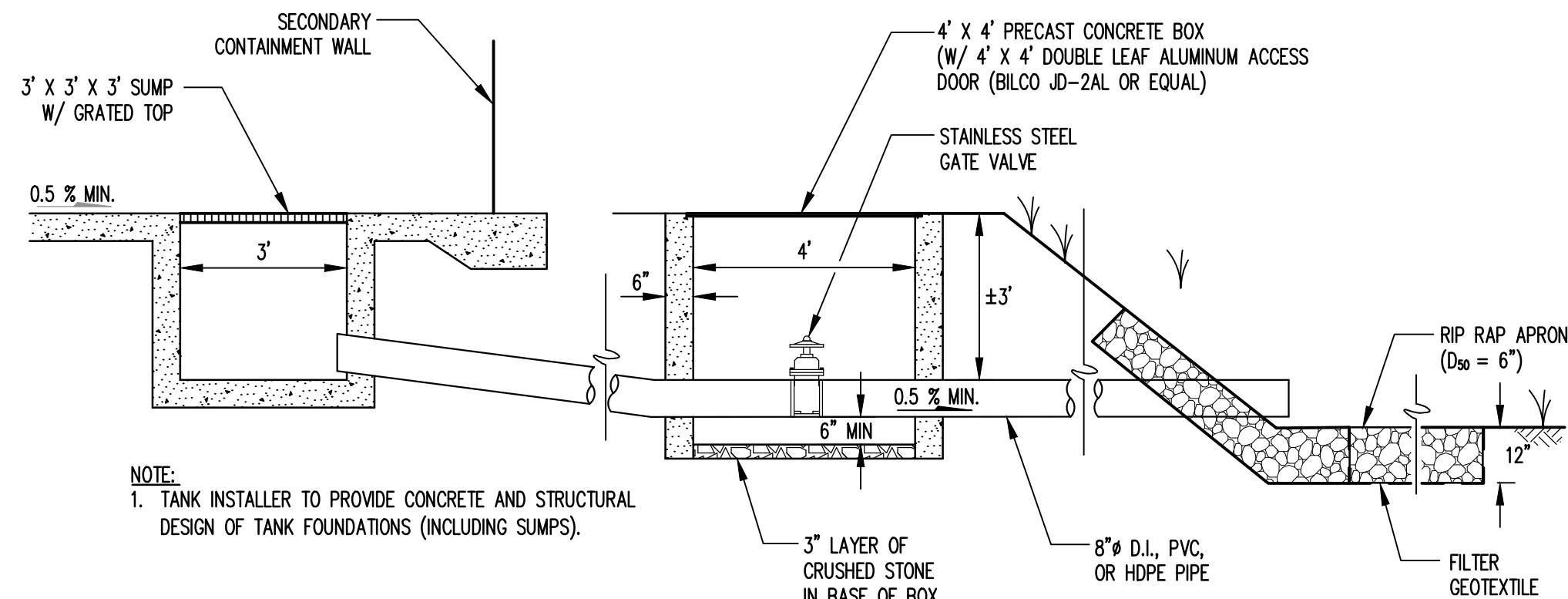
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LEACHATE STORAGE TANK

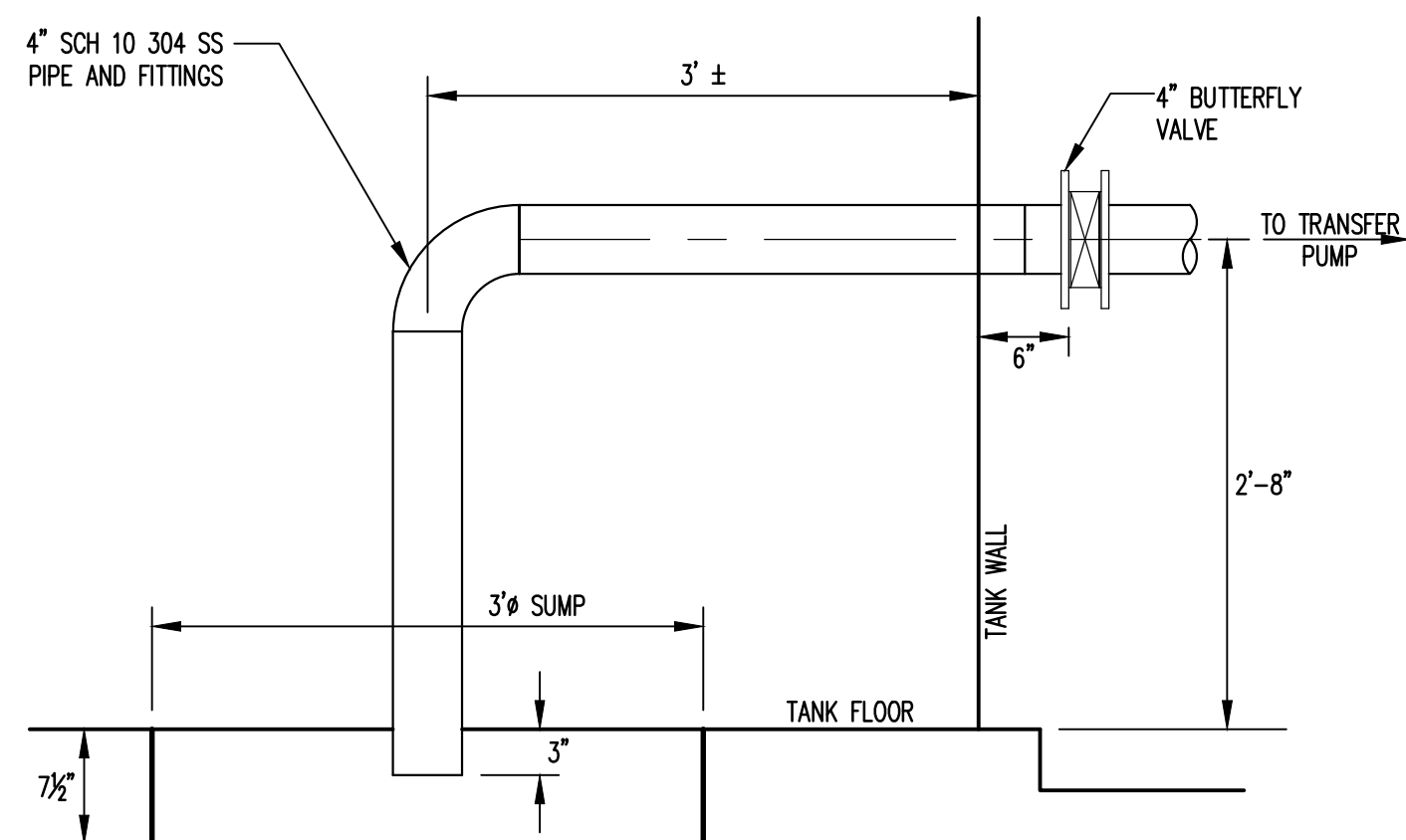
DETAIL 1
NOT TO SCALE

- NOTES:
1. SOME FEATURES SHOWN ROTATED FOR CLARITY.
 2. TANK STORAGE VOLUME = ±170,000 GALLONS.
 3. CLEANOUTS WILL ALSO BE INSTALLED IN THE FORCE MAIN PIPING WHERE LOW SPOTS ARE UNAVOIDABLE AND OTHER LOCATIONS WHERE ACCUMULATION OF SEDIMENT IS ANTICIPATED.

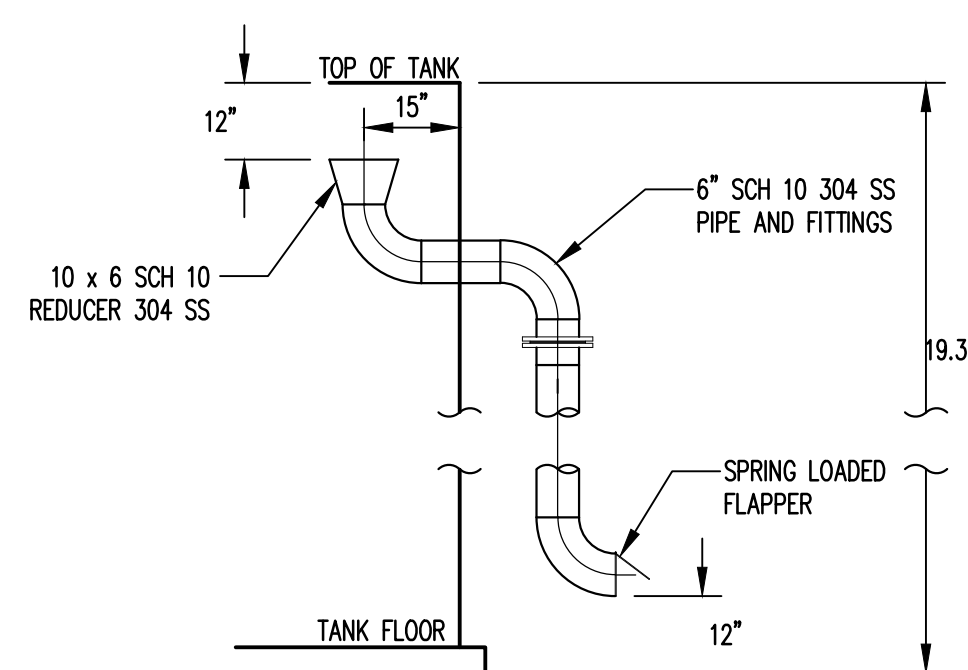


STORMWATER REMOVAL SYSTEM

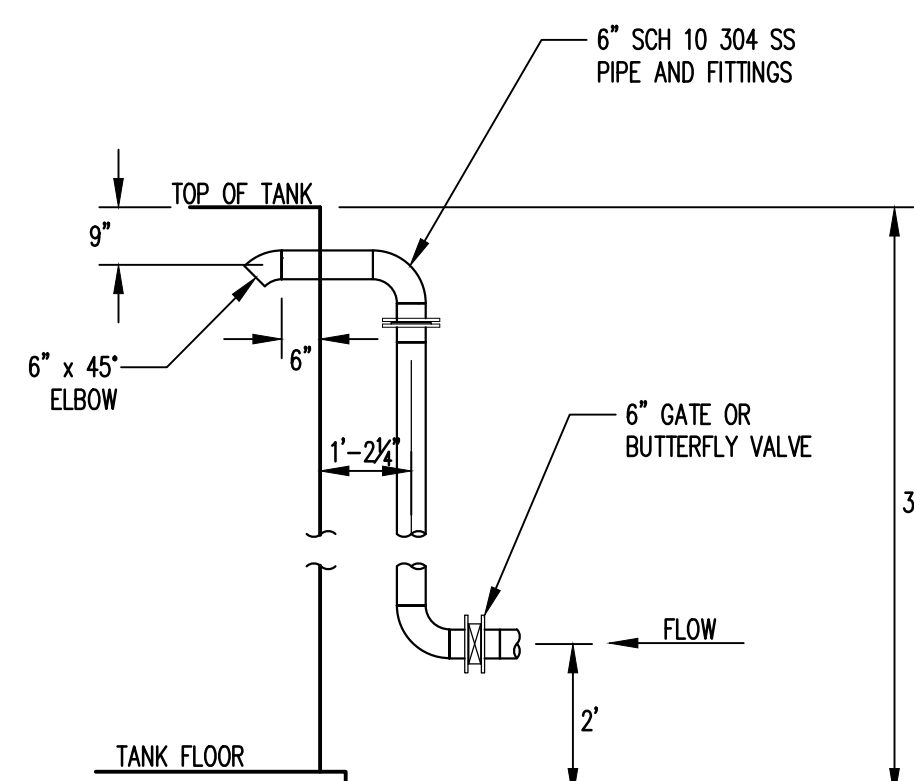
DETAIL 3
NOT TO SCALE



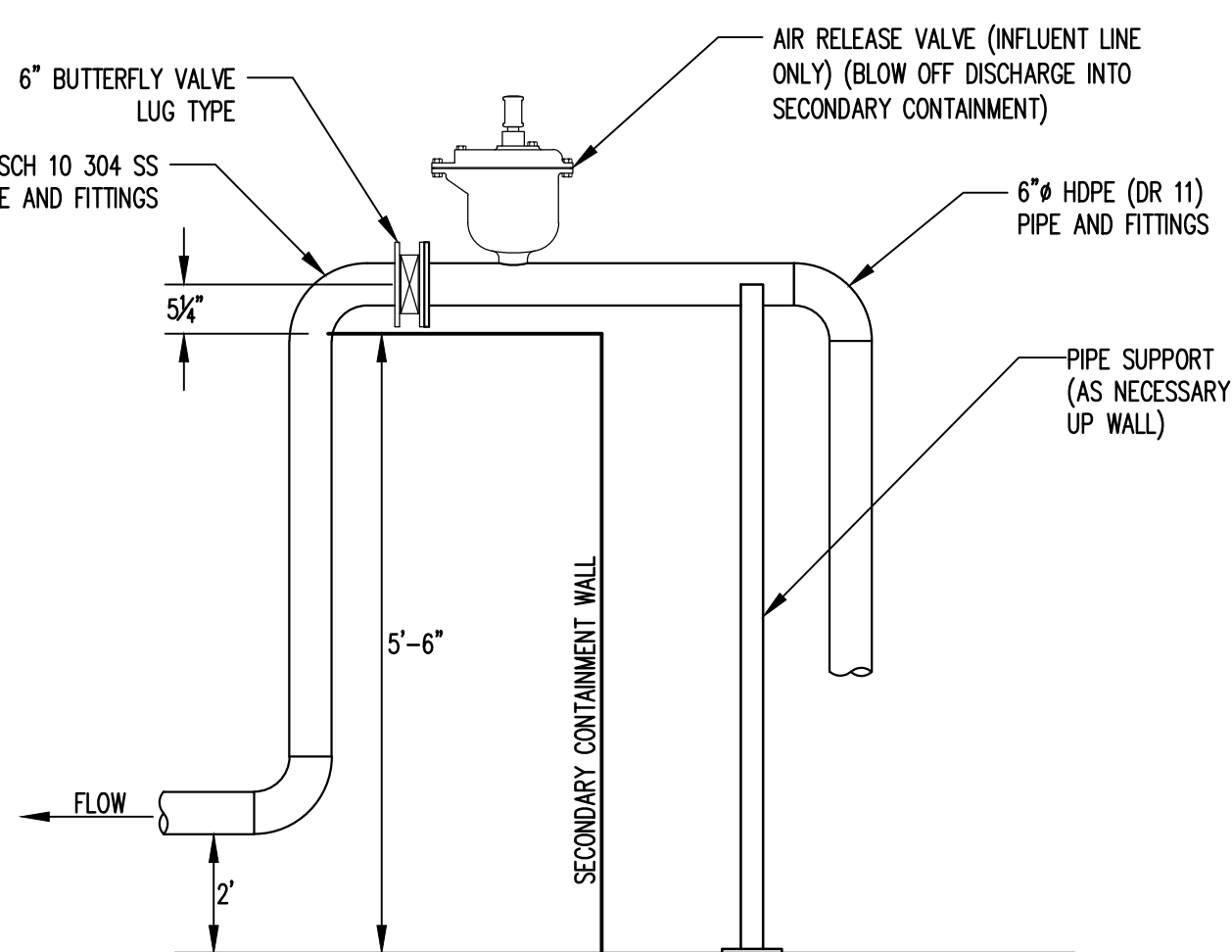
PUMP SUCTION PIPE IN TANK



OVERFLOW DETAIL



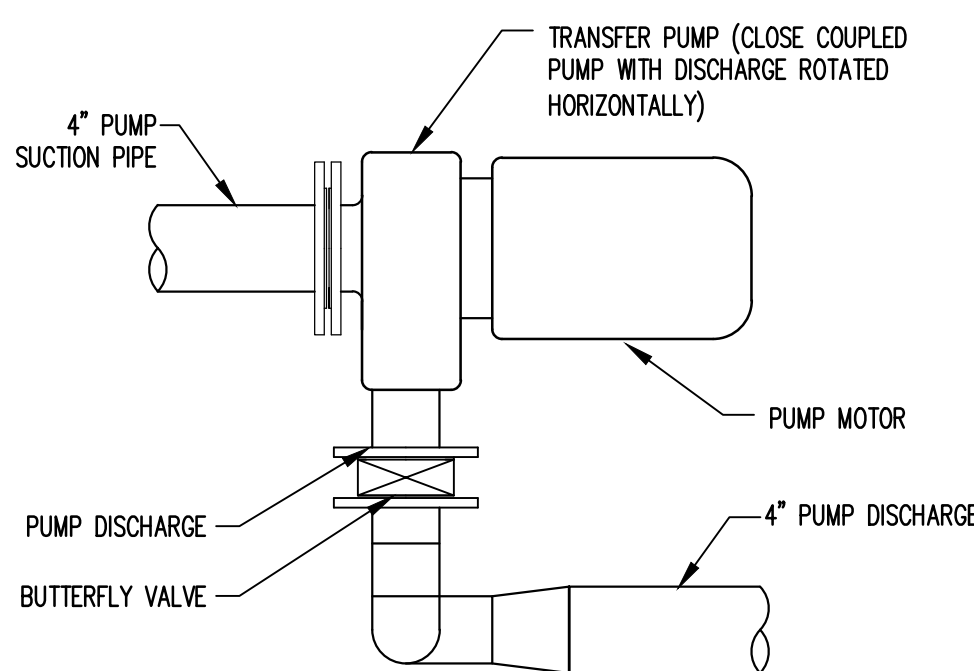
INFLUENT PIPE AT TANK DETAIL



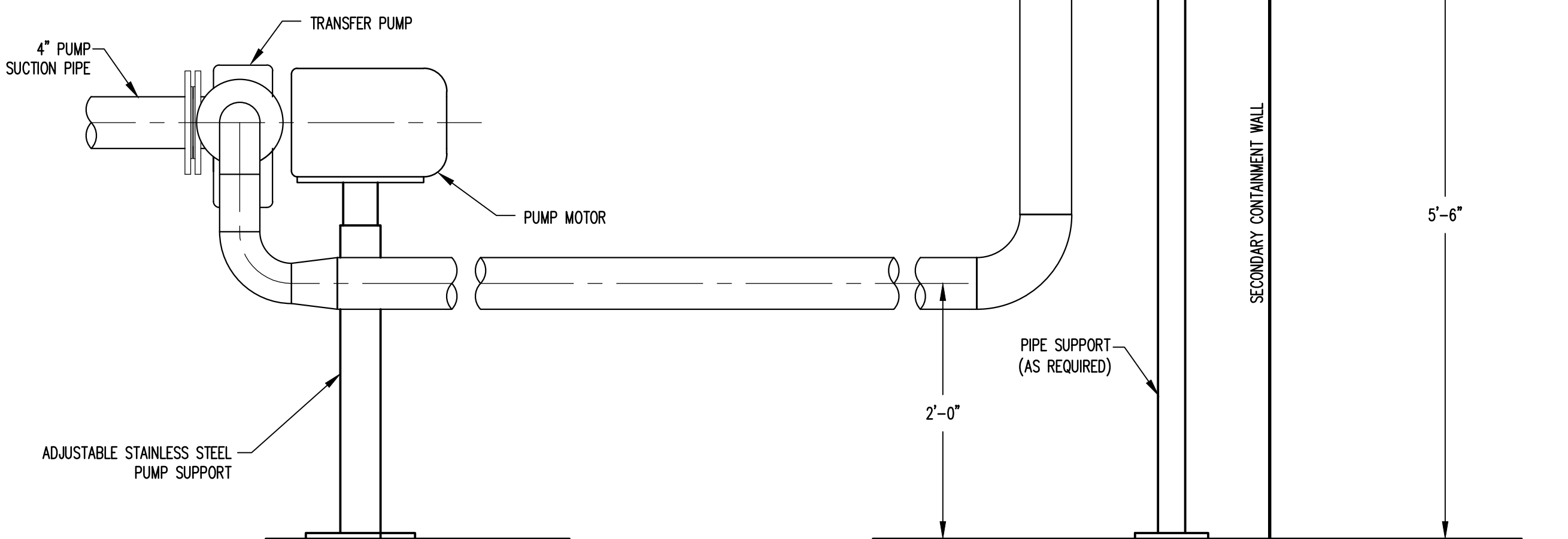
INFLUENT PIPE OVER SECONDARY CONTAINMENT

TYPICAL PIPING DETAILS

DETAIL 2
NOT TO SCALE



PLAN VIEW



TRANSFER PUMP AND DISCHARGE POINT

DETAIL 4
NOT TO SCALE

TRUCK LOADING POINT DISCHARGE

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OF AMERICA
COUNCE, TENNESSEE

PREPARED BY:

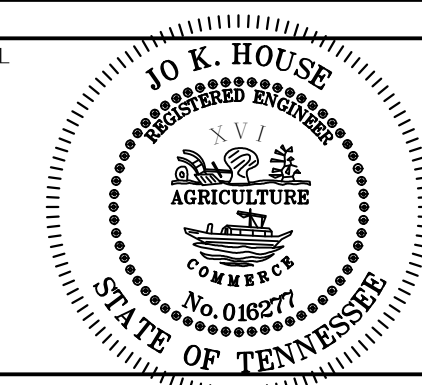
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REV.	DATE	DESCRIPTION
1	NOV 2014	RESPONSE TO TDEC
		COMPLETENESS REVIEW
2	APRIL 2015	RESPONSE TO TDEC
		NDD 2/25/15
4	AUG. 2015	RESPONSE TO 7/30/15 TDEC
		PERMIT REVIEW

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PROJECT TITLE:

HARBERT TRACT
CLASS II LANDFILL
PERMIT DRAWINGS

DRAWING TITLE:

LEACHATE STORAGE
TANK DETAILS

DESIGNED:	PROJECT NO:
DRAWN:	SCALE:
APPROVED:	DATE:
FILENAME:	JHPCA-D0145B
SHEET NUMBER:	DRAWING NUMBER:
28	TF1